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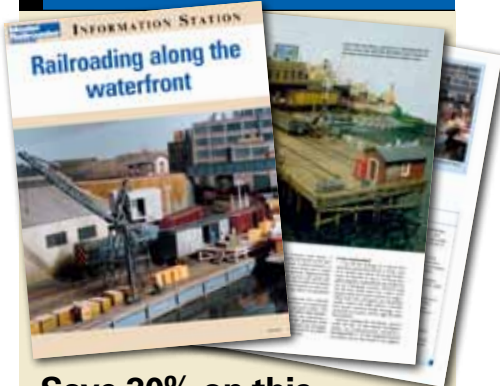
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Download the HO scale Utah Belt track plan

Eric Brooman's Utah Belt is featured on page 48. Click on the Utah Belt link in the Online Extras box of our home page to download a copy of the layout's track plan.



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Keeping our interests fresh



Choosing the photo of Eric Brooman's HO scale Utah Belt railroad for this month's cover was a no-brainer. Eric is an artist, and his rugged scenery work is stunning. But the point of his story on page 48 isn't vivid scenery, it's how he keeps his model railroad fresh.

Eric models the present day, so he's modeling today – literally. Two months from now, when 2011 calendars are replaced with those for 2012, the time setting of the Utah Belt also moves forward.

Staying current on Eric's railroad means new motive power – EMD SD70ACe diesels – and the retirement of older SD40-2 and SD50 models. Eric also keeps his railroad infrastructure up to date. He has replaced the “weather-worn” cantilever signal bridges on his layout with new aluminum mast signals.

Another fresh look is this month's track plan: the Milwaukee Road's Beer Line in HO scale.

Sound familiar?

The *Model Railroader* staff built a project layout modeling the Beer Line, which was published in the January through May 2009 issues. In this month's issue, author Rich Steenwyk offers a fresh take on the Beer Line.

While our track plan was 4 x 12 feet, Rich's shelf-style Beer Line, shown on page 64, stretches across part of the basement of his brother's home.

Yet another fresh look can be found on page 53. It's been 13 years since *Model Railroader* last published a story on handlaid N scale turnouts. The techniques Lance Mindheim shows in this story can also apply to other scales, and they are especially useful for HO scale layouts with lightweight rail, such as code 55 or even smaller.

A few other notes this month:

Take a Model Train to Work Day is Friday, Nov. 18. This is your annual justification to show off a locomotive or another model railroading object to your curious co-workers, and maybe even convert one or two of them.

We're wrapping up work on the *Model Railroader* magazine 75-Year Collection on DVDs. The disc set will contain every issue we have published from 1934 through 2009, all 108,000 pages. We've never offered anything like this before, so turn to page 67 for information about ordering your own set.

Digital editions of *Model Railroader* magazine will be on sale soon. Digital subscribers will be able to read each new issue on computers or portable devices such as iPads, Nooks, and other tablets. Stayed turned for more information.

On ModelRailroader.com last month we posted a video showing how 18 computer touch screens are used to operate Dil Huey's HO scale railroad. Dil's layout was featured in the October issue. This is one video you shouldn't miss. Subscribers can go to our website and click on “Online Extras,” then at the bottom click on “See all Online Extras” and scroll down to October's issue.

NEIL BESOUGLOFF

Contributing to Model Railroader

We welcome contributions from our readers, including articles, photographs, and prototype drawings. For detailed information on submitting material to MR, contact our editorial associate Eric Stelpflug at 262-796-8776, ext. 583, or mrmag@mrmag.com. *Model Railroader* assumes no responsibility for the safe return of unsolicited material. We assume unsolicited material is intended for publication by Kalmbach Publishing Co. unless otherwise noted. We assume letters, questions, news releases, and club news items are contributed gratis.

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The U50. A Timeless Beauty.

The U50 is a first in HO plastic modeling. With all-new tooling, it features a heavy die-cast chassis, directional headlights, detailed cab interior, and see-through radiator intakes with a squirrel cage blower. This impressive model offers prototypically accurate details per SP or UP, including rear walkways, nose details and equipment access doors. And it's DCC- and sound-ready.

The U50, created from scrapped gas turbine-electric locomotives in the 1960s, measures 83 feet, 6 inches long and towered over most contemporary locomotives of its time at 15 feet, 10 inches tall.

It towered over most contemporary locomotives at 15 feet 10 inches tall. The U50 weighed 559,620 pounds and produced 139,175 pounds of starting tractive effort. Inside the hood were two FDL-16 diesel engines, each with a generator, full radiator and dynamic brake setup. Up front was a tall, blunt nose cab without a front walkway, which gave the U50 its unique appearance.

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HO scale Electro-Motive Division SW1500. Athearn is offering this Ready-to-Roll switcher in new paint schemes, including Canadian National with Wisconsin Central reporting marks, Alton & Southern, and National

Aeronautics and Space Administration. The SW1500 has prototype-specific details and a nine-pin socket for a Digital Command Control decoder. The model is priced at \$119.98. Athearn Trains, 310-763-7140, www.athearn.com

Industry news

■ **Take a Train to Work Day.** On Friday, Nov. 18, 2011, model railroaders across the country will add trains and tracks to the watercooler conversations when they bring their favorite locomotive or other hobby artifact to work. Launched in 2001, Take a Model Train to Work Day kicks off model railroading's high season, culminating in the December holidays.

Take a Model Train to Work Day draws on the grassroots volunteerism behind the World's Greatest Hobby campaign to stimulate interest in model railroading. At offices like the General Motors Design Center in Warren, Mich., Take a Model Train to Work Day has become an annual tradition, with dozens of employees participating every year.

For more information on Take a Train to Work Day, visit the WGH website at www.greatesthobby.com.

■ **World's Greatest Hobby achieves non-profit status.** The Internal Revenue Service recently approved the World's Greatest Hobby as a non-profit educational charity, granting it 501(c)(3) status.

"On behalf of the board, I would like to thank Dave Swanson for all his help with this process," said Terry Thompson, *Model Railroader's* publisher. "We're very pleased to have reached this milestone, which will open the door to other opportunities. World's Greatest Hobby remains a unique example of an industry and its customers working together to promote a hobby."

Formed in 2001, the World's Greatest Hobby campaign helps educate the public about model railroading.

■ **World's Greatest Hobby on Tour 2012 schedule.** The World's Greatest Hobby on Tour will be returning to four markets and debuting in a fifth in 2012. The five tour stops are Indianapolis (Indiana State Fairgrounds), Jan. 7-8; Chicago (Schaumburg Convention Center), Jan. 14-15; Salt Lake City (South Towne Exposition Center), Feb. 4-5; Portland, Ore. (Oregon Convention Center), Feb. 25-26; and Cincinnati (Duke Energy Center), Mar. 10-11.

For more information about the World's Greatest Hobby on Tour, visit www.wghshow.com.

■ **Model Railroad Industry Division of the Hobby Manufacturers Association update.** The Hobby Manufacturers Association (HMA) Model Railroad Industry Division (MRID) council posthumously inducted Ed and Doug Suydam of the Ed Suydam Co. into its Hall of Fame and presented Allen Pollock of Fun & Games II with the Bobbye Hall award. The presentations were made in July at the division's membership meeting, held during the National Train Show.

The Suydam brothers got into the model railroad industry in the 1950s and produced mat board and corrugated metal structure model kits and freight and passenger car models. Many of the models are still being sold, built, and displayed today. Norman Suydam, Doug's son, accepted the awards on behalf of the family.

Allen Pollock received the Bobbye Hall Award, which recognizes distinguished service to the model railroad industry. Pollock has served as a member of the Model Railroad Industry Division Council since 2004, including three



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terms as vice president. He has also served as an officer of the National Model Railroad Association, and has served as the NMRA's industry liaison since 1990.

Awards were also presented to Pollock and Jason Shron (Rapido Trains) for their service to the organization.

■ **Great Decals expands line.** Great Decals is now selling decals produced by After Hours Graphics. Some of the Midwestern road names offered in the decal line include Cincinnati Union Terminal, Great Miami, and Indiana & Ohio. To see the complete product line, visit www.greatdecals.com/AfterHours/AfterHoursList.html.

H0 scale locomotives



■ **Alco C-628 diesel locomotive.** Delaware & Hudson (blue-and-gray scheme), Pacific Ry. of Mexico, Hamersley Iron, Lehigh Valley (white or Cornell Red schemes), Louisville & Nashville, and National Ry. of Mexico. Two road numbers each. Can motor, factory-installed handrails, and magnetic knuckle couplers. Direct-current model \$189.95; with SoundTraxx Digital Command Control sound decoder, \$299.95. January 2012. Ready-to-run. Bowser, 570-368-2379, bowser-trains.com

■ **Electro-Motive Corp. FT diesel locomotives.** New paint schemes: Atchison, Topeka & Santa Fe (original cat whisker freight scheme); Great Northern (*Empire Builder*); Milwaukee Road (maroon and orange); New York Central (lightning stripe); Northern Pacific (black with red and yellow stripes); and Reading (black with green and yellow stripes). Etched-metal details, prototype-specific details, and Kadee magnetic knuckle couplers. Direct-current A-B set, \$199.95; A-B set with SoundTraxx Digital Command Control sound decoder, \$349.95. Ready-to-run. InterMountain Railway Co., 303-772-1901, intermountain-railway.com

■ **General Electric AC4400CW diesel locomotive.** New paint schemes: BNSF Ry. (Heritage II paint

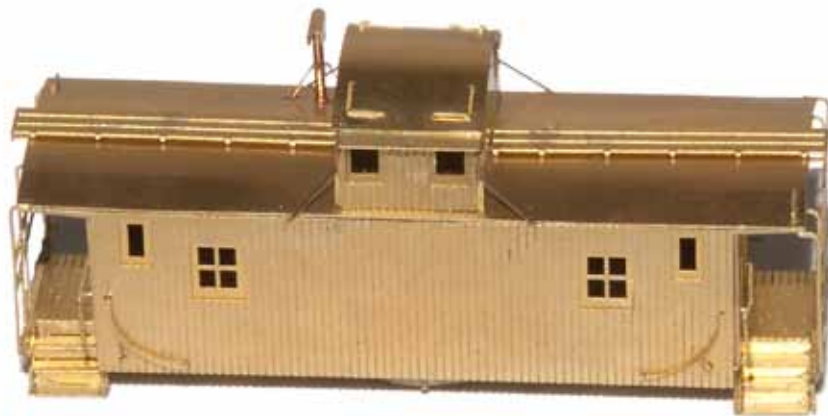
scheme), Canadian Pacific (golden beaver), and Union Pacific ("Building America" scheme). Five-pole motor with brass flywheels, golden-white light-emitting diode headlight, and 1.1" speaker housing in fuel tank. \$180 to \$190. Ready-to-run. Kato USA Inc., 847-781-9500, katousa.com

■ **2-8-0 "Old Timer" steam locomotive.** Canadian Pacific, New York Central, Southern Pacific, and Union Pacific. Three road numbers each. Nine-pin socket for Digital Command Control decoder, prototype-specific details, and McHenry scale magnetic knuckle couplers. \$159.98. January 2012. Ready-to-run. Roundhouse, 310-763-7140, www.roundhousetrains.com

■ **Electro-Motive Division SD9 diesel locomotive.** Burlington Northern Santa Fe (BN patch out, Phase I), Conrail (Pennsylvania RR patch out, Phase II), Southern Ry. (Phase II), and Southern Pacific ("Black Widow" paint scheme, Phase I). Four road numbers (two each for direct current and Digital Command Control models). Five-pole skew-wound can motor, metal grab irons and lift rings, and Proto-Max magnetic knuckle couplers. Direct-current model, \$199.98; with SoundTraxx Digital Command Control sound decoder, \$299.98. January 2012. Ready-to-run. Wm. K. Walther's Inc., 414-527-0770, www.walthers.com

H0 scale freight cars

■ **Eastern two-window caboose.** Former Roundhouse model, new paint



N scale Pennsylvania RR class N6b wood-side caboose. An etched-brass kit of a common Pennsy prototype is the latest offering from TrainCat Model Sales. The unpainted kit has separate grab irons and cupola braces but doesn't include trucks or couplers. It has a manufacturer's suggested retail price of \$38.50. TrainCat Model Sales, www.traincat2.com

schemes: Chicago & Eastern Illinois, Conrail, Missouri Pacific, and Penn Central. Three car numbers each. Full window glazing, metal wheelsets, and McHenry scale magnetic knuckle couplers. \$27.98. Ready-to-Roll. Athearn Trains, 310-763-7140, www.athearn.com

■ **Thrall 53-foot three-unit articulated well car.** Pacer Stack Train and TTX. Six car numbers each. Also available undecorated. Etched-metal details, prototype-specific running boards, and magnetic knuckle couplers. \$109.95 (undecorated, \$89.95). Ready-to-run. Master Line. Atlas Model Railroad Co., 908-687-0880, www.atlasrr.com



■ **Pullman-Standard 7,315-cubic-foot-capacity waffle-side boxcar.** New paint schemes: Louisville & Nashville; Atchison, Topeka & Santa Fe; Burlington Northern Santa Fe; CSX; Detroit, Toledo & Ironton; Norfolk & Western; and Southern Ry. Six car numbers each; also available as undecorated kit. Separately applied details, metal wheelsets, and Kadee no. 58 magnetic knuckle couplers. \$32.95. Platinum series. Ready-to-run. ExactRail LLC, 866-945-1701, www.exactrail.com

■ **Association of American Railroads 53'-6" 70-ton flatcar.** New paint schemes: Central RR of



N scale 1932 American Railway Association boxcar. New road names on this Atlas model are Soo Line; Chesapeake & Ohio; Nashville, Chattanooga & St. Louis (yellow stripe scheme); Norfolk Southern (pre-1982 company); and Western Maryland. Each paint scheme is available in three road numbers. The ready-to-run car has Accumate couplers and is priced at \$23.95. Atlas Model Railroad Co., 908-687-0880, www.atlasrr.com

Pennsylvania; Chesapeake & Ohio; Erie Lackawanna; Indiana Harbor Belt; and Pere Marquette. Six car numbers each. Laser-cut wood deck, wire details, and Kadee magnetic knuckle couplers. \$29.95. Ready-to-run. InterMountain Railway Co., 303-772-1901, www.intermountain-railway.com

■ 40-foot single-sheathed boxcar.

New paint schemes: Canadian Pacific, Missouri-Kansas-Texas, Seaboard Air Line, and Southern Pacific. Three car numbers each. Metal wheelsets and McHenry scale magnetic knuckle couplers. \$19.98. January 2012. Ready-to-run. Roundhouse, 310-763-7140, www.roundhousetrains.com

■ **Evans 50-foot boxcar.** New paint schemes: Canadian National, Conrail (blue, Penn Central patch out, mineral red, or U.S. Savings Bond paint schemes), and Western Pacific. Metal wheelsets and Proto-Max magnetic knuckle couplers. \$19.98. January 2012. Ready-to-run. Wm. K. Walther Inc., 414-527-0770, www.walthers.com

H0 scale passenger cars

■ Silverliner IV "married pair"

two-car resin kit. One-piece cast-resin shells, detailed underbody, tinted window inserts, and Southeastern Pennsylvania Transportation Authority-licensed decals. \$129.99. Island Modelworks LLC, www.islandmodelworks.com

■ **Pullman-Standard 73-foot lightweight baggage car.** New paint schemes: Canadian National; Chicago Great Western; Great Northern (Big Sky Blue); Gulf, Mobile & Ohio; Kansas City Southern Ry.; and Louisville & Nashville. Factory-installed wire grab irons, metal

wheelsets, and Proto-Max magnetic knuckle couplers. \$64.98. January 2012. Ready-to-run. Wm. K. Walther Inc., 414-527-0770, www.walthers.com

H0 scale structures

■ **Military barracks kit.** Laser-cut wood kit with separate windows and trim. Footprint is 4" x 8½". \$39.95. Micro-Trains Line Co., 541-535-1755, www.micro-trains.com



■ **Old homestead.** Factory-assembled and -decorated structure. Details include a quilt draped across a porch railing, trellis, a tractor-tire planter with flowers, and a dog resting on the porch. \$64.99. Built & Ready Landmark Structures line. Woodland Scenics, 573-346-5555, woodlandscenics.com

H0 scale details and accessories

■ **40-foot standard-height container three-pack.** Evergreen (EMCU or EISU reporting marks), Genstar, Uniglory, and Wan Hai. Two sets each. Also available undecorated ("Evergreen" style). Separately applied door rods and handles, optional vents, and prototypically accurate beveled corrugations. \$32.95 per three-pack (undecorated, \$26.95). Master Line. Atlas Model Railroad Co., 908-687-0880, www.atlasrr.com



■ **Illuminated bicycles and motorbikes.** Sixteen different cyclists and 12 different motorbikes with riders. Bicycles include front light-emitting diodes (warm white) and red rear LEDs that operate on alternating current or direct current at 6-20 volts. Select models also offered in N and Z scales. \$29.95 each. Produced by Bicyc-LED, available from Allied Model Trains, 310-313-9353, www.alliedmodeltrains.com

■ **Pullman-Standard lunch counter-lounge-dormitory car sides.** Chicago, Burlington & Quincy and Great Northern. Brass sides with full skirting, etched weld seams, and drill-starter points for grab irons. Sized to match Walther's *Empire Builder Ranch*- and *Lake*-series cars or Brass Car Sides basic body kit. \$33.75 each plus \$4.50 for direct orders. Brass Car Sides, 507-931-2784, www.brasscarsides.com



■ **Wood barrels.** One-piece tan-colored resin castings. Six-pack, \$5. Frenchman River Model Works, 308-276-2174, www.frenchmanriver.com

■ **Sewer grate and inlets.** Etched-brass kit. From a Milwaukee prototype. Includes six grates and six inlets. \$3.95. Great Lakes Models, greatlakesmodels.com



■ **Trailers and accessory sets.** Hot dog trailer, \$19.09. Ice cream trailer,



N scale freight cars. New cars from Micro-Trains Line Co. include 40-foot plug-door boxcars lettered for Fruit Growers Express (\$22.85), Chicago Great Western (\$16.95), and Pacific Great Eastern (\$17.55); a Southern Pacific 50-foot gondola with load, \$19.30; and a Denver & Rio Grande 50-foot flatcar with load, \$17.10. All cars have plastic wheelsets and knuckle couplers. Micro-Trains Line Co., 541-535-1755, www.micro-trains.com

\$19.09. Beer garden accessories (12 benches, six tables, and three umbrellas), \$10.27. Beer garden accessories (seven kegs, 10 beverage crates, and one table), \$10.27. Six benches and three garbage cans, six benches, or four park benches and one circular bench, \$8.80 per set. Flower pots (27 flower pots and flower troughs), \$10.27. Noch GmbH & Co., www.noch.com

N scale locomotives

■ Electro-Motive Division GP60M and GP60B diesel locomotives.

Atchison, Topeka & Santa Fe (as-delivered) and Burlington Northern Santa Fe (GP60M in Heritage II paint scheme, GP60B in Heritage I scheme with two road numbers). Four road numbers each except as noted above. Directional headlights and ditch lights, separately applied details, and magnetic knuckle couplers. \$125-130. Ready-to-run. Fox Valley Models, 847-768-2344, www.foxvalleymodels.com

■ **Electro-Motive Division SD90/43MAC diesel locomotive.** Canadian Pacific (golden beaver herald), Indiana Rail Road, and Union Pacific. Two road numbers each. Five-pole motor with dual brass flywheels, directional headlight, and factory-printed number

boards. \$110-120. Ready-to-run. Kato USA Inc., 847-781-9500, katousa.com

N scale freight cars

■ **Gunderson Maxi-Stack IV well cars.** Arkansas-Oklahoma (ex-Northwest Container, late version, three sets), BNSF (post-2005 herald), and TTX (yellow with white reflective stripes, late version). Four sets each except as noted above. Metal wheelsets and magnetic knuckle couplers. \$74.95 per set.

DeLuxe Innovations, 973-887-3919, www.deluxeinnovations.com

■ Pullman-Standard PS-2CD 4,427-cubic-foot-capacity covered hopper.

New paint schemes: Archer Daniels Midland (TLDX reporting marks), Burlington Northern Santa Fe, Continental Grain Co. (TLDX reporting marks), and Milwaukee Road. Six car numbers each. Etched stainless steel running boards, separately applied details, and McHenry magnetic knuckle couplers. \$24.95. Ready-to-run. ExactRail LLC, 866-945-1701, www.exactrail.com

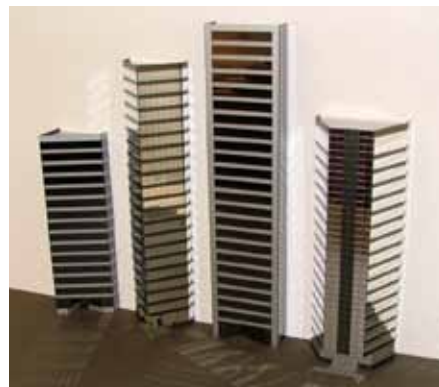
■ **Quad hoppers.** Conrail; Illinois Central Gulf in 1972 paint scheme (five car numbers), 1974 scheme (one number), or 1982 scheme; Norfolk Southern; and Seaboard System. Twelve car numbers each unless noted. \$23.95 each. Ready-to-

run. Trainworx Inc., 970-874-9747, www.train-worx.com

N scale structures

■ Middlesex Manufacturing Co.

Injection-molded plastic kit. Includes loading dock, brick panels to blank out windows, and optional window vents. Footprint is 3" x 7½". \$34.95. Atlas Model Railroad Co., 908-687-0880, atlasrr.com



■ City skyline low-relief buildings.

Factory assembled with reflective window glazing. \$40-45. Model Art - Model Division of Archinnet, 816-737-0816

N scale details and accessories

■ **Pullman-Standard lunch counter-lounge-dormitory car.**



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■ **Minneapolis & St. Louis refrigerator car.** Custom-decorated Accurail HO scale kit sold by the Chicago & North Western Historical Society. \$18 plus \$5 shipping per order. Illinois residents add 8.785 percent sales tax. Order from C&NWS-M, P.O. Box 1068, North Riverside, IL 60546. www.cnwhs.org



■ **Louisville & Nashville 42-foot single-dome tank car.** Custom-decorated Athearn Trains HO scale kit sold by Division 8 of the National Model Railroad Association's Mid-Central Region. \$14.99 plus \$5.95 shipping. Order from div8-mcr-nmra.org/site/html/store.html or call 502-327-6178.

■ **Northern Pacific Ry. 2012 wall calendar.** Thirteen photos plus key dates in NP history. \$7 each plus \$1.75 shipping and handling per order. NPRHA Calendars, 5916 West 21st Place, Kennewick, WA 99338.

Chicago, Burlington & Quincy and Great Northern 1140-series. For 1947 *Empire Builder* and 1951 *Western Star*. Brass sides with full skirting, etched weld seams, and drill-starter points for grab irons. For use with American Limited Models core kit. \$23.75 each plus \$4.50 for direct orders. Brass Car Sides, 507-931-2784, www.brasscarsides.com

■ **40-foot container chassis two-packs.** Flexi-Van, "K" Line, OOCL, and Sea-Land. \$22.95 each. DeLuxe Innovations, 973-887-3919, www.deluxeinnovations.com

■ **40-foot corrugated-side trailer.** Pacific Fruit Express and Union Pacific (four paint schemes). Six trailer numbers each. \$15.95. Trainworx Inc., 970-874-9747, www.train-worx.com

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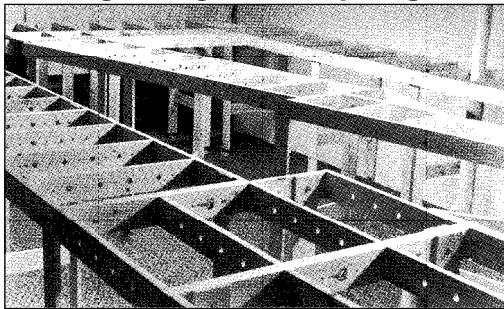


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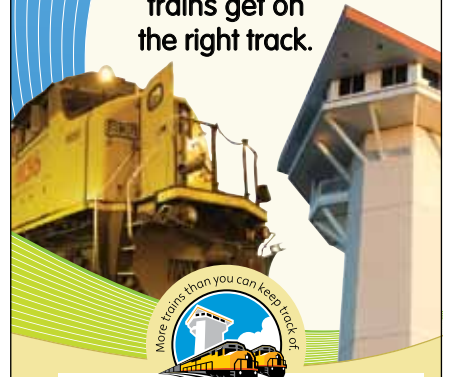
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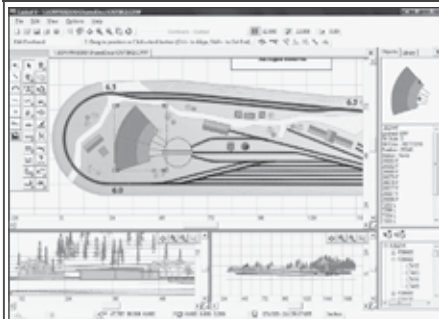
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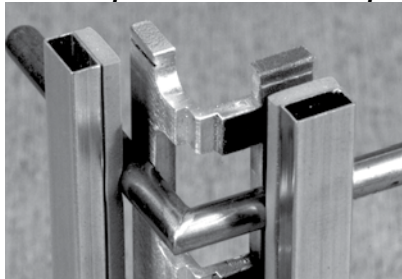
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NEWS&PRODUCTS

S scale locomotives

■ Southern Pacific class P-8 and P-10 4-6-2 steam locomotives.

Class P-10 offered with skyline casing and in *Daylight* scheme. Brass model with directional lighting, window glazing, and detailed backhead. Direct-current models, \$1,499.95; with QSI Digital Command Control and dual-mode Quantum sound, \$1,649.95. Ready-to-run. Third Rail Division of Sunset Models, 408-866-1727, www.3rdrail.com

S scale details and accessories

■ **Wood crates.** One-piece wood-colored resin castings. Six-pack, \$10. Frenchman River Model Works, 308-276-2174, www.frenchmanriver.com

■ **Assorted vehicles.** Black Bandit series 6: 1969 Chevrolet C-10, 1977 Dodge Royal Monaco, 1980 Pontiac Firebird, 1989 Ford Mustang GT, 2003 Mercury Marauder, and 2010 Ford Taurus police car. Country Roads series 6: 1966 Dodge D-100, 1972 Chevrolet Camaro Z/28, 1973 AMC Javelin AMX, 1975 Dodge Monaco, 2008 Ford Crown Victoria (Chesterfield County, Va., police), and 1981 Pontiac Firebird Trans-Am. Die-cast metal vehicles with detailed engines and rolling vinyl tires. Prices to be announced. GreenLight LLC, 317-287-0600, www.greenlightcollectibles.com

Z scale locomotives

■ **Electro-Motive Division F7 A and B diesel locomotives.** Atchison, Topeka & Santa Fe (October 1953 freight scheme). With magnetic knuckle couplers. Powered A unit, \$129.95; non-powered B unit, \$49.95. Ready-to-run. Micro-Trains Line Co., 541-535-1755, www.micro-trains.com

Z scale freight cars



■ **23,000-gallon-capacity funnel-flow tank car.** New paint scheme: General American Marks Co. Metal wheelsets and AutoLatch knuckle couplers. Single car, \$32; four-pack, \$113. Ready-to-run. American Z Lines, 614-764-1703, www.ztrack.com

■ **Assorted freight cars.** Great Northern 50-foot double-door boxcar, two car numbers available, \$24.70. Soo

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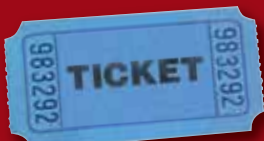
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HO scale Bethlehem quad hoppers. New paint schemes on this ready-to-run car from Tangent Scale Models are Clinchfield, Bessemer & Lake Erie (six road numbers), Illinois Central Gulf (six numbers), Louisville & Nashville (six numbers), and Union Pacific (three classes, two paint schemes). Twelve numbers except as noted. Unnumbered cars available for all roads except UP (decals sold separately). Wire grab irons, metal wheels, and removable coal load. \$32.95. Tangent Scale Models, 828-279-6106, tangentscalemodels.com

Line Pullman-Standard PS-2 70-ton two-bay covered hopper, \$19.95. New York, New Haven & Hartford 40-foot boxcar, \$18.90. Models come with Micro-Trains trucks and magnetic knuckle couplers. Ready-to-run. Micro-Trains Line Co., 541-535-1755, www.micro-trains.com



■ **33-foot two-bay hoppers.** Lehigh Valley with external posts and Reading Co. with offset sides. Hay Bros. Garage coal loads and knuckle couplers. Two-pack, \$42. Ready-to-run. Full Throttle, 352-589-0303, wdwfullthrottle.com

Decals

■ **Assorted decals.** Great Northern heavyweight passenger cars (includes updated Pullman and Railway Post Office lettering), Illinois Terminal second-generation locomotive stripes, and Union Pacific rebuilt and Trinity refrigerator cars with ARMN reporting marks. \$6.50 (HO scale); \$5.25 (N scale). Microscale Industries, 714-593-1422, www.microscale.com

Software

■ **TrainPlayer version 4.0/Ops.** Allows user to assemble and run trains on model railroad track plans. New version adds the "Ops" package, which

features new displays and dialogs for setting up layouts and simulating freight traffic. Requires Windows 2000, XP, Vista or Windows 7. TrainPlayer 4.0/Operator with Ops, \$59 (includes TrainPlayer screen saver, 101 Track Plans, and 300 additional layouts); TrackLayer 4.0/Builder with Ops, \$99 (includes all of TrainPlayer/Operator plus TrackLayer tool, scenery tool kit, premium layouts, and cars collection). Upgrades for existing users are \$29 for direct download; add \$10 for DVD version. TrainPlayer Software, 707-320-4246, www.trainplayer.com

Track cleaners

■ **ACT-6006 track cleaner.** Cleans track and leaves non-slip conductive film that improves current flow. Safe on all materials. May be used with many popular brands of track cleaning equipment. Eight-ounce bottle, \$7.95. Aero-Car Hobby Lubricants, 708-246-9027, www.aerocarlubricants.com

Tools

■ **Static grass applicators.** GrassTech. Includes applicator tool, two AA batteries, and instructions. \$39.95. GrassTechII. Includes applicator tool, standard filter, hopper seal, 9V battery, and instructions. \$139.95. FlockTech+. Includes applicator tool, standard filter, hopper seal, 15V UK power supply, and instructions. GrassTechUSA.com, 303-949-7605, www.grasstechusa.com

■ **Model PH-1400EK Master Proheat plastic welding kit.** Features top-mounted dial-in controls for

adjusting temperature and airflow. Electronic control system prevents overheating. Temperature range from 130 to 1,000 degrees Fahrenheit. Master Appliance Corp., 262-633-7791, www.masterappliance.com

English/Metric scale rules.

Available for N, Z, and Z/N/T (1:450 proportion) combination. Made from flexible .5mm stainless steel with chemically etched markings and a non-slip waterproof cork backing. \$9 each. Z scale clearance gauge three-pack. Each gauge designed for a specific era (pre-1920, 1920-1969, and post-1969). \$9 per three-pack. NZT Products LLC, 609-658-6650, www.nztproducts.com

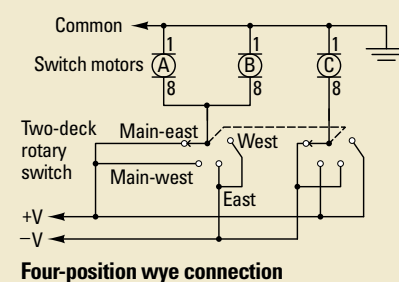
CD-ROMs/DVDs

■ **Twin Ports Time Machine, Vol. 2 digital image disk.** Features 125 black-and-white high-resolution images of the Northern Pacific Ry.'s Lake Superior Division in the 1960s. High-definition 16:9 JPEG format on CD-ROM. Apple and Mac compatible. Images may be viewed on computer or high-definition television and printed. \$39.99 plus \$2.50 shipping. TwinPorts Rail History Inc., 630-893-5719, twinportsrailhistory.com

■ **St. Peter.** Seventy-minute DVD shows the construction of the HO scale St. Peter layout. Subjects include building streets, constructing tunnels, and modeling water. PDF instruction manual for building the layout is included. \$14.26. Noch GmbH & Co., www.noch.com

Correction

There was an error in Thomas Hunt's story "Better turnout control with slow-motion switch motors" in the September issue. The wiring diagram for the four-position wye connection in fig. 2 on page 45 was incorrect. The corrected version is shown below. We apologize for any confusion this may have caused.



Four-position wye connection

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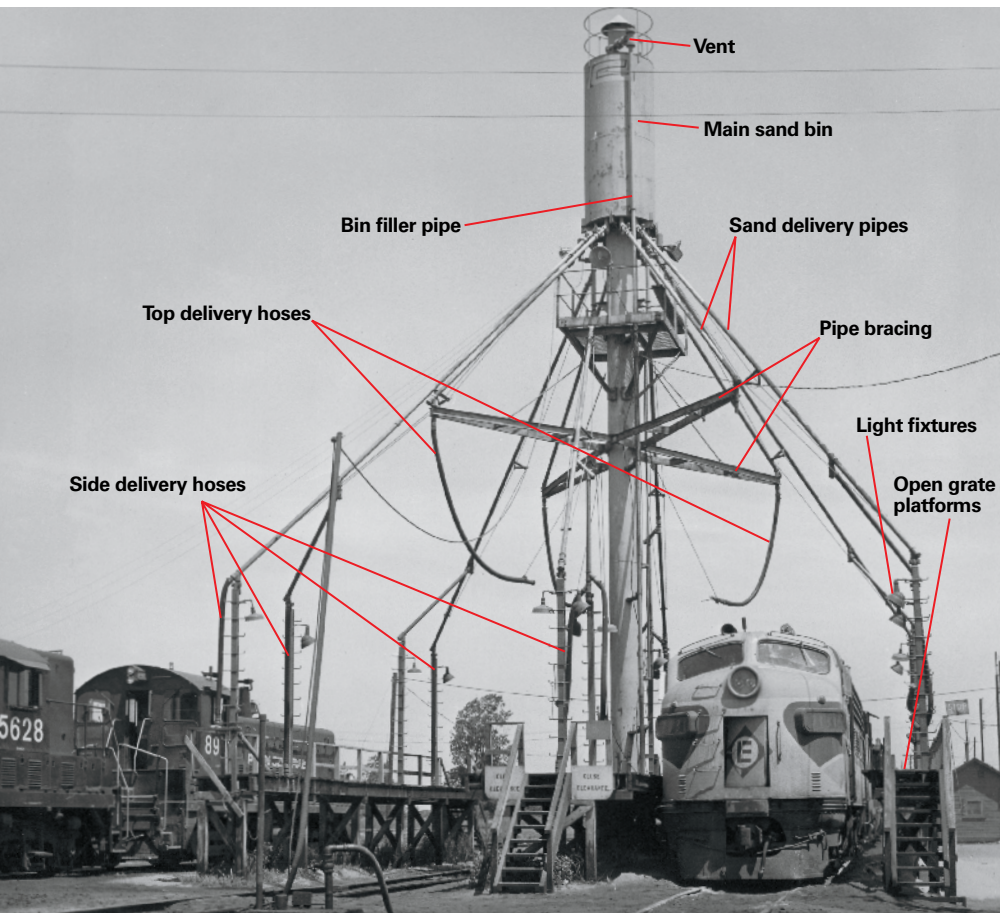
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Located at Stanley Yard near Toledo, Ohio, this Conrail sanding tower serviced dozens of locomotives every day. It normally only takes a few minutes to fill the sandboxes on most locomotives. John Uckley took the photo in July 1976.

Gravity fills diesel locomotive sand boxes

Can you explain where sand is used on diesel locomotives and how often the supply is replenished?

Pat Shockey, Lincoln, Ill.

Diesel locomotives have internal sand boxes and control valves that use gravity and compressed air to dispense dry sand through small pipes just ahead of the wheels. This thin layer of sand increases the adhesion between the drivers and the rails to keep drive wheels from slipping, especially on wet rails. Newer road locomotives have electronic controls that detect wheel slips and automatically apply sand. A manual control valve is also provided so the engineer can apply sand as desired.

Each diesel unit carries its own sand supply in water-tight boxes that keep the

sand dry. Cab units had two sandboxes on each side, mounted above the trucks, with filler hatches high on both sides. These boxes held 16 cubic feet of sand.

Road switchers have sandboxes built into both ends with filler hatches on the roof, high on the sides, or on both ends. Their sand capacity ranged from 27 to 70 cubic feet depending upon the unit's size.

Yard switchers have sandboxes in the front and rear corners with filler hatches on the sides or top. Most yard switchers hold around 25 cubic feet of sand.

Locomotives need dry sand, so it has to be processed before use. Carloads of raw sand were originally purchased from local suppliers who shipped it to the railroad in open hoppers. Most engine terminals included sand houses

where laborers shoveled raw sand into heaters where it was dried.

Once dry, the sand flowed easily so it could be screened to remove any debris that might plug up the locomotive sand pipes. Finally, the clean sand was shoveled into a bin that fed into a pneumatic system that used compressed air to blow the sand up into an overhead bin. From there, the sand was dispensed by gravity into the locomotives.

In more recent times, railroads buy carloads of dry sand from commercial suppliers who do the mining and processing. This commercial sand is finer and more uniform in texture.

Dry sand is usually shipped in older two-bay covered hoppers assigned for this service. Many of these cars are fitted with outlet pipes in their hoppers, so the railroad can connect them directly to its sand system at the engine terminal.

Gravity delivery. Clean sand flows easily, so most railroads use a gravity system like the sand tower shown in the photo to deliver it to the locomotives. An elevated sand bin is mounted on top of a tall supporting column. A smaller steel pipe runs from the sand house or receiving track to the elevated bin. As before, compressed air is used to blow the dry sand up into the bin.

A series of spring-loaded manual valves are built into the floor of the sand bin. Pulling on an actuating cable opens a valve and allows sand to flow down through an angled pipe and into a flexible hose for delivery to a locomotive. The different hose positions and lengths are provided to reach the sandbox locations on many different types of locomotives.

Raised open grate platforms are provided along both sides of the two servicing tracks so the workmen can reach the side fillers. A lot of sand gets spilled, so the open grates allow the spillage to fall right through the platforms. From time to time the spillage is cleaned up. On road switchers the workmen use the end ladders to climb up to the roof to reach the topside fillers.

In most service locations, the sanding tower is placed in a line with the fuel and wash racks. That way once the inbound locomotive has been inspected, hostlers can fill the sandboxes first, refuel the locomotive, and finally wash the unit to clean off any spilled sand before it goes to the ready track for its next assignment. – *Jim Hediger, senior editor*

Jim Hediger



Some railroads, like the Wabash, promoted football specials that even had a classy "Football Special" drum-head sign. This one waits in the siding at Tolono, Ill., during a University of Illinois game in 1953. J.P. Lamb photo

Football specials

Special trains were a popular way to transport large groups of fans to college football games for many years. Football specials were generally chartered by alumni groups or student organizations.

Even though the train operates as a "passenger extra," it was scheduled to arrive at or near the stadium about an hour before kick-off. Its homeward departure was usually set for a half-hour after the game ended.

The railroad used coaches of all types, and high-capacity commuter cars were even better. One or more full baggage-express cars served as temporary bars and they were spaced out in the consist.

A pair of regular passenger units or dual-service road switchers, coupled back-to-back, made it easy to run around the train while the game was in progress. That way the special would be ready for the return trip as soon as the game ended.

Significant regional games called for additional trains. In the 1950s, whenever the Michigan Wolverines hosted their arch rivals, the Ohio State Buckeyes, up to 12 specials would come to Ann Arbor from the south. With only a six-track yard to work with, it had to be a switching nightmare to get everything turned and ready to return home. — J.D.H.

Send your questions about prototype railroading to Information Desk, *Model Railroader* magazine, P.O. Box 1612, Waukesha, WI 53187, or e-mail proto@mrmag.com. We regret we can't answer all the questions we receive.

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Test twice, solder once

One of the best lessons I've learned in building layouts is to test as I go. In fact, it's such a good lesson that I relearn it every once in while.

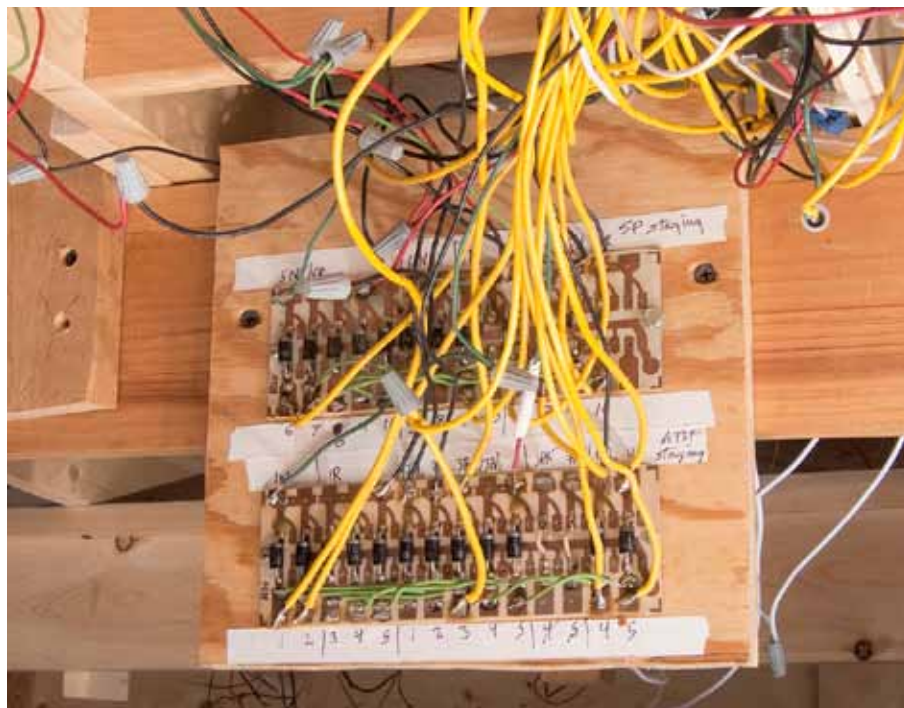
My problem is patience. Testing takes a little time and slows my progress, or so I sometimes start to think. Actually it can (and I guarantee it will) save a lot more time in the long run, and probably some money too.

Let me give you an example. Recently I was building and installing a couple of diode routing systems to control the turnouts for my N scale staging yards.

If you're not familiar with such systems, I'm afraid they're a subject in and of themselves that I don't have the space to go into here. I wrote an article on them back in the May 1982 *Model Railroader*, and several Kalmbach books on wiring cover them. Briefly, such systems let you set up a route through a group of turnouts with the push of a single button. It not only takes fewer buttons than aligning each turnout individually, but it's also a neat thing to be able to do.

An air of confidence. I had a good head start on these projects because I'd salvaged the circuit boards from my previous layout and was able to redesign and reconfigure them. I was also using push buttons I'd recycled, so I was feeling pretty good about the entire thing.

I mounted all the required gadgetry for the first system to a plywood panel, then crawled under the layout and attached the panel to the



Jim's diode routing system is shown installed under his N scale layout. This isn't the kind of place you want to spend a lot of time working above your head.

benchwork. Then I connected the wires to the switch machines and push buttons, proudly extricated myself, and hauled myself back to my feet. (I've attained an age and girth which makes trips under the layout not nearly as fun as they used to be.)

Then I pulled up a stool and sat down to enjoy the fruits of my labor, watching a locomotive move in and out of the staging tracks via the various routes I had established. About half the time the locomotive went where it was supposed to, but the other half it didn't.

So now I had to make several more descents into the depths to fix the problems. This didn't go well. I finally came to my senses, disconnected all the wires, and took the entire affair back to the workbench. There I could better see what I was doing and wasn't trying to solder above my head while looking through the wrong part of my bifocals.

Testing equipment. I used a test light to check that each outgoing terminal was working, and if it wasn't, to find where the breakdown was. The photo at left shows the light I use, which I've had forever. I highly recommend getting something like it. I sometimes use a multimeter, but it's a lot more delicate.


The bad diodes I found were easily replaced. Since they worked fine on the

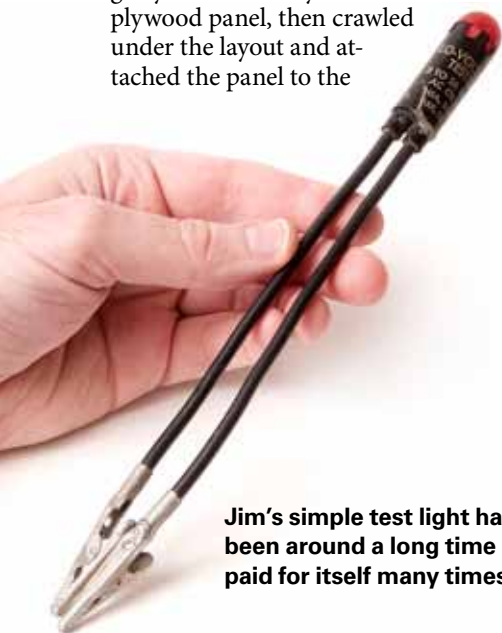
previous layout, I can only surmise I'd overheated them while soldering new wires for the switch machines.

I went under the layout and re-installed the system, this time testing each wire as I connected it. I spent three hours on a Saturday installing the system the first time and about five on Sunday doing it over and getting it right.

A sequel. This re-found faith in testing paid an extra dividend. I'd run out of my previously used push buttons and had bought a new batch of 40 via the Internet, saving a lot of money in the process.

"Why bother," I thought, but I went ahead and tested each of those new buttons anyway. I discovered that 39 were "normally open," but one was "normally closed." Somehow it had gotten in the wrong bin at the supply house. (If you know what you're looking at you can spot the difference by the shape of the soldering leads. I didn't know it at the time, and if I ever get another batch, I'll have forgotten by the time I get around to installing them.) I didn't bother to try getting my 40 cents back.

But back to my story. If I had installed this push button, it would have fried one of my Peco switch machines, even though they're quite rugged and will take a lot of abuse. A little testing had paid off big. 



Jim's simple test light has been around a long time and paid for itself many times.

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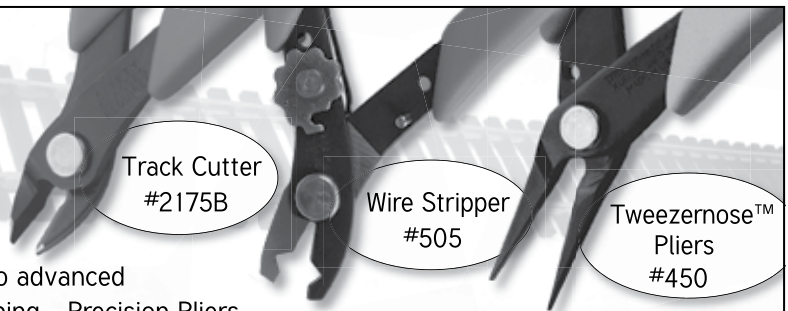
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Rotary tools are useful for many model railroad jobs



A rotary motor tool is useful for a wide range of modeling jobs that involve drilling, shaping parts, and cleaning surfaces. Remember to always wear safety goggles and use a light touch to guide the rotary tool and let its speed do the work.

Rotary motor tools are small hand-held devices that operate at high speeds and low torque to do a variety of polishing and cutting tasks. These tools come in a variety of sizes, in both corded and battery-operated versions. A wide range of interchangeable bits and accessories are available to handle all sorts of jobs.

Modelers are most familiar with the Dremel Moto-Tool that was invented more than 75 years ago and used extensively in manufacturing work during World War II. It was first marketed to the public in 1945 and was an instant success with hobbyists. Similar products are now called rotary tools, and they're sold by most power tool manufacturers.

Speed is the key to the rotary tool's success, as its operating speeds range from 5,000 to 35,000 rpm. It has little torque compared to an electric drill, which operates at speeds up to 2,800 rpm with high torque. The big difference is the drill requires pressure on the bit to do its job, while the rotary tool relies on speed and the type of bit to do its work.

Rotary tool manufacturers offer a wide variety of bits, drills, accessories, and attachments to enhance the performance and versatility of their power tools for specific jobs. These tools include steel burrs, ceramic grinding and polishing points, cut-off disks, drill bits, buffing and polishing wheels, high-speed router

Useful rotary tool operations

- Beveling wood corners
- Cleaning brass detail castings
- Cleaning surfaces for soldering
- Cutting piano wire
- Cutting rail
- Drilling holes
- Enlarging openings
- Making slots in wood or metal
- Polishing coupler shanks
- Removing excess solder
- Removing die-cast metal flash
- Sanding wood parts
- Shaping small parts
- Smoothing rough edges

bits, sanding disks and bands (sleeves), and bristle or wire brushes.

These bits are all sold individually, but you should also take a look at the various packaged assortments. If there's an assortment you can use, the package price is more economical.

The rotary tool shown above is a Dremel Model 4000, and it's widely available. It has a new case design that combines high-impact gray plastic with rubbery black plastic areas that are easy to grip. It can be held like a pencil for fine work or gripped in the whole hand to do heavier operations. A power switch is located near the front of the tool, while

a separate speed control is near the back. This allows the tool to be turned on and off without changing the speed setting.

Safety goggles are a must any time you work with rotary tools. Given the high spindle speed, they can easily launch tiny particles (or loose bristles or wires from brushes) at a velocity capable of causing an eye injury.

To prevent an accidental startup, always unplug the tool or remove the battery while you change bits.

Instead of a chuck, rotary tools use a collet to secure the bit shanks in the spindle. The collet helps center the bit and holds the shank securely so it won't loosen at high speeds. Always use the proper size collet for the bit, and tighten the collet nut securely with a wrench. Most Dremel bits have a $\frac{1}{8}$ " shank, but collets are available to hold other specialty bits with $\frac{3}{32}$ ", $\frac{1}{16}$ ", and $\frac{1}{32}$ " shanks.

Besides explaining how to use the motor tool, most instruction booklets include speed recommendations for each type of bit. It's a good idea to read and follow these instructions, as excessive speed may cause some of the tools, such as ceramic cutoff disks, to shatter.

The working speed must be adjusted for various materials. Heat builds up with speed and overheating may deform plastics. A slower speed will help to avoid most of the heat buildup.

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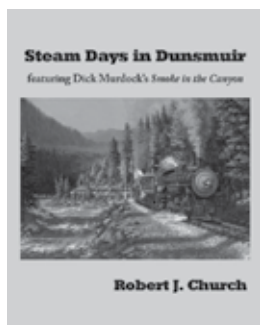
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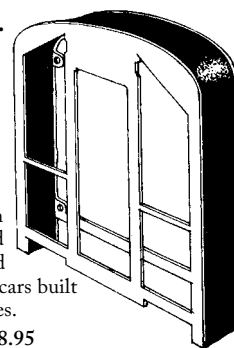
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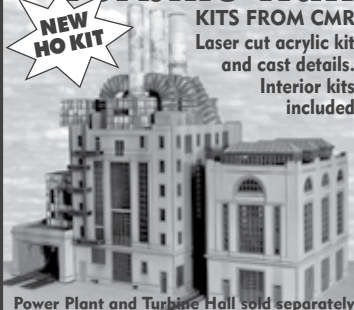
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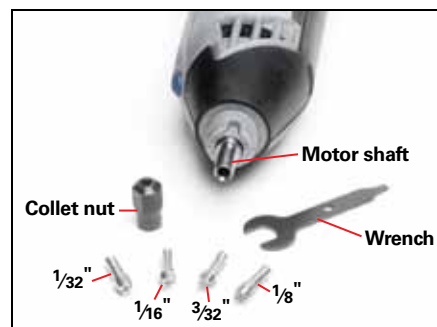
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WORKSHOP TIPS



Additional collets are available in sizes that will fit most tools. It's essential to use the proper size to get maximum security as the collet nut is tightened.

The body of the rotary motor tool has a number of vents that allow air to circulate through the motor during use. I use my shop vacuum to keep these vents clean, especially if I'm using the tool on wood or other dusty materials.

A little practice goes a long way if you've never used a rotary tool before. Start with one of the medium size burs and a block of soft wood. Use a light touch and try to make an even groove along one edge of the wood block. Then try rounding off another edge with a sanding band. As you build confidence and get a feel for the tool, you'll soon be thinking up your own practice exercises.

Listen to the sounds made by the both the rotary tool and the bit as they'll indicate how well the bit is working. Remember to be patient. You want a light touch that doesn't significantly reduce the motor's speed – let the cutter do the work. Too much pressure causes heat that will burn the wood and damage the bit.

Once you gain some confidence, try similar practice sessions on other scrap materials until you become familiar with the sound and feel of what you're doing. Then you're ready to take on a regular modeling project.

Before long, you'll be wondering how you ever got along without one of these rotary motor tools on the workbench. – *Jim Hediger, senior editor*



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Pelle Søbørg added a view block and exterior details to this HO scale BLMA Models yard office. He toned down the shine of the injection-molded plastic by applying thinned paint with an airbrush. Photos by the author

Detail and weather an assembled structure

I began gathering structures for my new HO scale Union Pacific Daneville Subdivision model railroad as soon as I'd started the benchwork. Yes, I'm reusing some of the buildings from my previous layout, as I explained two months ago. However, I'll also be adding a few new structures, including this BLMA yard office. Though the structure comes factory assembled, there are some easy ways to dress up this model.

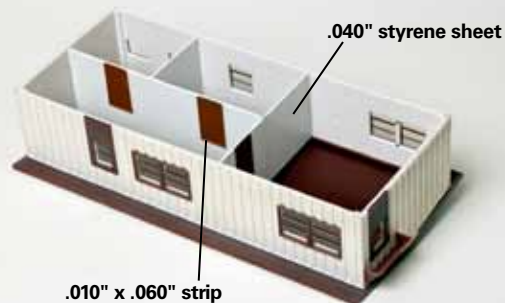
The first thing I do with any factory-assembled model is weather it. Even if a building is molded to look like brick, metal, or wood, it still has that plastic shine. Simple weathering with pastels and an airbrush will give any structure a more realistic finish.

If your structure is in the foreground and lacks an interior, add a view block. It can be as simple as a piece of construction paper or made from styrene to look like separate rooms. No matter what method you use, the goal is to keep visitors from seeing straight through the building.

Finally, enhance your building with details. Electrical boxes, air conditioners, and rooftop vents are a few possibilities. Look at real buildings for ideas.

Enhancing a factory-assembled structure is fun and easy to do with common modeling supplies and scrap box items. This works in any scale, so give it a try.

Step 1 An easy view block



Since the yard office is in the foreground of my layout, its lack of interior detail is obvious. To prevent viewers from looking right through the building, I added interior walls from .040" styrene sheet. I used .010" x .060" strip for the door frames.

I painted the frames and doors a warm brown color that matched the exterior color. I didn't paint the walls.

Step 2 Airbrushing



I wanted to keep the window glazing clean during the weathering process. I thought the easiest way to ensure this would be to remove the glazing. Wrong! The glue used to secure the clear plastic was quite strong. I had to resort to plan B, measuring the window panes and cutting individual pieces of masking tape.

With all the windows masked, I sprayed the building with thinned Model Master Sand (1 part paint to 2-3 parts thinner). Once the paint dried, I sprayed the building with Vallejo Model Air Matte Finish.

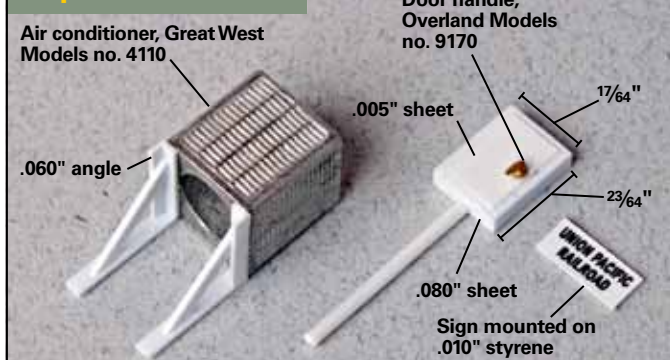
Step 3 Powdered pastels



Next, I used a soft paintbrush to apply brown and black powdered pastels. I applied the pastels sparingly on the white surfaces, where they'd be more visible than on the dark brown surfaces of the roof, doors, awning, and window frames.

When applying pastels, build up the color in light layers. It's easier to apply several light coats than to remove a heavy coat. Move the brush parallel to the siding corrugations so you don't get wavy lines of pastel.

Step 4 Exterior details



My last step was to add exterior details. Since it can be hot in Daneville, I installed an air conditioner to keep the HO railroaders comfortable. I found a Great West Models white metal air conditioner in my scrap box that fit the bill perfectly [BLMA Models also offers an air conditioner for this building, part no. 4109 – Ed.]. I made a wall-mount bracket from .060" styrene angle and .010" x .060" strip and attached the casting to it with cyanoacrylate adhesive (CA).

Next, I made a $\frac{17}{16}$ " x $\frac{23}{64}$ " electrical cabinet from .005" and .080" styrene. The brass door handle is an Overland Models detail part, now out of production. Precision Scale Models part no. 3997 can be used instead. I used a 4-scale-foot length of .030" rod for the conduit.

I then made the UNION PACIFIC RAILROAD sign on my computer and printed it using a laser printer. I attached the paper sign to a piece of .010" styrene with spray adhesive. Then I cemented it to the wall with CA.

Step 5 Final touches



I airbrushed the air conditioner and electrical cabinet with Model Master Gull Gray. After the paint dried, I applied some powdered pastels to the air conditioner's grills so they'd stand out. I also used pastels to add rust streaks below the wall-mount bracket for the air conditioner. I sealed the pastels with the same Matte Finish I used in **Step 2**.

I scraped paint from the gluing faces of the air conditioner and electrical cabinet before attaching them to the walls with CA. This ensures a strong glue bond.

Once the CA cured, I set the yard office on my layout. To complete the scene, I added concrete barriers and railroad crew vehicles in the parking lot, a radio antenna tower (BLMA no. 4101), and a no-trespassing sign next to the grade crossing.

Factory-assembled structures save time for other modeling projects. And with a bit of weathering and detailing, you can turn a ready-to-use structure into a building with character. **MR**

NEW YORK

Pennsylvania RR waterfront operations inspired this 10 x 16 HO scale layout

By Joe Kaspar

Photos by the author



1. There's a lot of activity in Harsimus Cove on Joe Kaspar's Pennsylvania RR Eastern Division. The HO scale layout packs detailed waterfront scenes into a compact space.

HARBOR

in a spare room





2. Joe incorporated three main features on his layout. Along with a double-track main line, Joe wanted to model the Kearny Meadows locomotive terminal (foreground) and the Harsimus Cove yard and waterfront terminal (background).

In the mid-20th century many railroads around New York Harbor had their own “navies” of tugboats, car floats, and other marine vessels. They also built large freight terminals to handle both marine and rail traffic. Living in northwest New Jersey and commuting to work by train to New York City, I spent a lot of time watching trains and boats working at the harbor. When Walthers introduced its waterfront series of HO scale structures in 1998, I knew that I’d found the theme for my next model railroad.

I started to build piers, terminals, ships, and bridges, but I postponed building the layout until I retired and relocated to Maryland in 2004. The next year I started planning my HO scale Pennsylvania RR Eastern Division. The layout setting is inspired by two of the Pennsy’s busiest waterfront terminals.

Historical locations

For about 100 years, railroads serving New York Harbor relied on water transportation to move commodities and

freight to and from Manhattan and the surrounding New York boroughs and New Jersey waterfront. These railroads included the Baltimore & Ohio; Central RR of New Jersey; Delaware, Lackawanna & Western; Erie; Lehigh Valley; Long Island; New York Central; and the Pennsylvania.

Each railroad had its own marine division, and from their vast railroad yards on the New York and New Jersey waterfronts, tugboats painted in railroad colors and markings pushed and pulled car floats across the harbor. By 1944, the Pennsylvania RR’s marine division included 82 car floats with a combined capacity of 826 railroad freight cars.

One of the oldest waterfront yards was the PRR’s Harsimus Cove Yard in Jersey City. Harsimus Cove served as a holding yard for freight floated between New Jersey and New York. After the railroad completed improvements in 1870, Harsimus Cove Yard had a capacity of 2,584 freight cars.

After the Pennsy built the larger Greenville Yard in 1906, the railroad

The layout at a glance

Name: Pennsylvania RR Eastern Division

Scale: HO (1:87.1)

Size: 10'-3" x 15'-9"

Prototype: Pennsylvania RR

Locale: Jersey City waterfront

Era: late 1940s to early 1950s

Style: walk-in

Mainline run: 68 feet

Minimum radius: 24" (main), 18" (industrial)

Minimum turnout: no. 5 (main), no. 4 (industrial)

Maximum grade: 2 percent (main)

Benchwork: open grid

Height: 38" to 46"

Roadbed: cork over ½" plywood

Track: Walthers code 83 flextrack

Scenery: plaster cloth over metal screen

Backdrop: hand-painted Masonite

Control: Digitrax Digital Command Control



3. Pennsylvania F units head out of Harsimus Cove, while fishing vessels wait for the swing bridge to open. A bonus of the maritime setting is that Joe gets to build ship models, another hobby that he enjoys.

dedicated Harsimus Cove primarily to Manhattan shipments. The main locomotive terminal for the PRR's New York Harbor operations was at Kearny Meadows, which was across the Hackensack River from Harsimus Cove.

For photos of railroad operations in New York Harbor, check out *New York Harbor Railroads, vols. 1 and 2* by Thomas R. Flagg (Morning Sun Books).

Key layout features

My new home's second floor loft provided space for a 10'-3" x 15'-9" walk-in layout. The resulting design focuses on three key features.

The first feature is the locomotive terminal at Kearny Meadows to house my steam and diesel locomotives. The steam engine terminal includes a 130-foot turntable, six-stall roundhouse, machine shop, and back shop. The diesel-servicing terminal has a powerhouse, service platforms, and a shop building.

The second feature is the Harsimus Cove yard. The double-ended yard consists of four tracks that can hold 12 freight cars each. I added a lead so that switchers won't block the main while doing their work. A cabin (caboose) track completes the yard.

A runaround track next to the yard also provides access to the industries and

car floats at Harsimus Cove. The car floats have storage tracks for an additional 27 freight cars.

The third feature is a double-track main line that can handle 12 to 15 car freight trains. Crossovers allow east-bound and westbound trains to return to Kearny Meadows or Harsimus Cove.

Limited space in the room meant that I had to give up some aisle width to achieve the features I wanted. I'm of slim build and planned to run the railroad mainly by myself, so I found the 14"-wide aisles acceptable.

Benchwork and track

Since my train room is in the living area of my home, I built my layout on Sievers benchwork modules to keep dust and debris to a minimum. Sievers designed the modules to my specifications. Each module included factory-drilled wood pieces and all the necessary hardware for easy assembly. I built all the modules in a single day.

On top of the benchwork I installed 1/8" plywood subroadbed. I used Homasote sheets for the roadbed at the Kearny Meadows engine terminal. For the main line and the yard at Harsimus Cove I used cork roadbed.

All the turnouts have insulated frogs that I connected to the auxiliary contacts

on switch machines. Wiring turnouts this way helps avoid open circuits.

Soldering jumper wires to a metal frog takes great care to avoid inadvertently melting plastic track ties. To minimize this problem I use resistance soldering, where electrodes pass current through the work. The resistance to the current generates heat at the joint and melts the solder. In addition to soldering jumper wires to turnout frogs, I use resistance soldering for connecting feeder wires to rail and for rail joiners.

Most of my track is Walther's flextrack and turnouts. Originally I also used a Walther's 30-degree crossing, but my brass locomotives kept stalling over it. I discovered that two of the drivers on the locomotives always straddled two of the insulated portions of the crossing. Since I couldn't find another 30-degree crossing that would work any better, I scratch-built my own and gapped the rails where necessary to prevent any shorts.

Now on ModelRailroader.com

Learn more about rail-marine operations in *Railroading along the waterfront*. Click on Information Station under the How-to tab on the MR home page.

Layout control

I operate the layout with a Digitrax Digital Command Control system. I use wireless DCC throttles, and up to three people can run trains at the same time. Jumping into DCC was a big decision for me. I upgraded all of my brass locomotives with SoundTraxx DCC sound decoders. Learning this technology has provided a lot of enjoyment.

I have the space to run two trains on each mainline track at the same time. Trains are hidden from view in the tunnel between Kearny Meadows and Harsimus Cove. To eliminate the problem of one train overtaking another on the same track I use two products from DCC-BitSwitch (DCCBitSwitch.com). The Block Control BitSwitch prevents one train from entering the tunnel until the preceding train exits. This product is used with the Set Zero Packet Generator that automatically controls the braking function of a locomotive.

For turnouts I use control panels and a diode routing system instead of stationary DCC decoders. I can align all the turnouts needed to bring a train into any yard track by depressing a momentary push button. Initially I intended to reuse my old twin-coil switch machines from an earlier layout, but I couldn't find a reliable control for more than three of the machines ganged together. When more than three turnouts are required, I use Tortoise slow-motion switch motors. [For more information on designing self-aligning yard ladders, see "Better turnout control with slow-motion switch motors, Part one: Wiring yard ladders for easy operation" in the August 2011 *Model Railroader*. – Ed.]

Modeling water

The layout features approximately 20 square feet of water, and I get a lot of compliments on its realism. I use Magic Water by Unreal Details, which is a two-part resin. This product starts as a clear liquid and takes 24 to 48 hours to cure.

When pouring "water" over a large area, it's important to divide the area into smaller sections to keep the material contained until it starts to cure. You can use scrap pieces of wood or plastic for dams. I poured the Magic Water to an $\frac{1}{8}$ " depth. After about six hours the resin had cured enough for me to remove the dams. At this point the resin was still fluid enough to fill in the gaps.

After 15 hours, I used a stick to make waves in the water's surface. This kept the surface of the ocean harbor from looking like the still waters of a mill



4. The switch crew uses an idler car (the flatcar on the right) between the locomotive and cut of reefers being loaded onto the car float. The idler car keeps the heavy locomotive off the float bridge during switching moves.

Detailing a railroad tugboat



One of my favorite models on the layout is the Walther's HO scale railroad tugboat. This kit was part of the Walther's waterfront series and is an accurate representation of a typical railroad tug. However, I added some modifications that made this model even more realistic.

Crews usually kept the forward fuel and ballast tanks of railroad tugs empty to lighten the bow. Since the bow rose higher, the stern sat lower in the water, providing better propeller thrust and greater pushing power. Walther's designed its kit with a flat-bottomed partial hull to model a tug level at the waterline. I modified the kit by gluing a $\frac{3}{16}$ " block of balsa wood on the bottom of the hull. Then I sanded the wood until it was flush at the stern and higher at the bow. Once installed on the layout, the model had the correct look of a New York Harbor railroad tug. Next, I replaced the plastic ladders and railings with etched-brass parts. I then finished the model with paint and decals, using prototype photos as a guide. – J.K.

pond. After 16 hours the water was too thick to add any more texture.

For the drier parts of the landscape I used plaster cloth over screen. I added rock castings and plaster fill to the basic landforms. I then applied ground cover of various colors and textures.

In the locomotive terminal and yard I simulated ties embedded in the ground. First I mixed spackling compound with earth colored latex paint. Then I spread

this mixture between the ties and the ground surface until the ties looked buried. I applied ground cover to blend the track into the rest of the scene.

Finishing the harbor

A backdrop of $\frac{1}{8}$ " Masonite extends my layout's scenes beyond the models. I hand-painted the sky and clouds and then glued on images of structures that I'd cut out of a commercially available



5. A pair of K4 4-6-2 Pacifics heads to Harrisburg, Pa. (off the layout). The lead locomotive is an MTH model and the second is a United PFM brass import.



6. An A5s 0-4-0 and B6sa 0-6-0 take on coal and water at Harsimus Cove Yard. Both locomotives are Key Imports brass models.



7. The Kearny Meadows locomotive terminal includes a roundhouse and a turntable. This L1s 2-8-2 Mikado is heading out for a morning freight run.

backdrop. Some images are smaller than HO scale models, so they help add to the illusion of depth.

Although many of the models are plastic kits, I had to do a lot of kitbashing to get the models to fit specific locations. For example, I combined parts from two Walthers waterfront terminals to construct Terminal No. 2 in Harsimus Cove. I also used some corrugated siding from my scrap box.

I scratchbuilt and kitbashed many of the ship models and harbor craft on the layout. Some of the kits I used include the Walthers car float, which I modified by replacing the center track with a loading platform. [For more information on modeling car floats see “Rail-marine operations for your model railroad” by V. S. Roseman on the next page. – Ed.]. I also used the Walthers railroad tug. My tips for making the tug look more like a prototype railroad tug are on page 37.

I have a sound system in the room that plays a recording of ships, foghorns, seagulls, and water slapping against pilings. Now all I have to do is figure out how to recreate the smell of salt water!

This layout was a pleasure to design and build. It brought together my favorite two hobbies, model railroading and building ship models. Best of all my HO waterfront railroad brings back many fond memories of watching the operations of the “railroad navies” of New York Harbor. [MR](#)



▶▶ Meet Joe Kaspar

After working for more than 40 years in the television broadcasting industry, Joe Kaspar retired from NBC in New York City. He and his wife, Alice, now live in a senior community in Easton, Md. Joe’s other hobbies include traveling and model building. He recently completed an HO replica of a 101-car 1947 Ringling Bros. and Barnum & Bailey Circus train.

RAIL-MARINE OPERATIONS for your model railroad

How to model the vessels
and practices real railroads use
to ride the waves

By **V.S. Roseman** • Photos by the author

Where railroads reached a body of water too wide to bridge, some elected to transport trains to the other side using car-float operations. Although this practice isn't as common as it was in the 1950s, you can still find present-day situations where trains take to the water.

In North America there were once massive waterfront hubs in New York and on the Great Lakes involving many railroads. Other important operations were found in San Francisco; Vancouver, B.C., Canada; and along the Mississippi River near New Orleans and St. Louis. Chicago and Detroit also hosted significant rail-marine operations.

Ocean-going marine railroad operations at one time sailed from Palm Beach, Fla., to Havana, Cuba. Even today, the CG Ry. operates large ocean-going car ferries between Mobile, Ala., and Veracruz, Mexico. These vessels transport rail cars in their holds or on their decks. In contrast, other railroads used powered car floats, which were barges specially designed to carry rail cars across the Great Lakes and some rivers.

Railroad mergers in the 1960s and 1970s eliminated much of the need for car floating, as the newly connected lines simply bypassed the water obstacles.

Incorporating rail-marine operations on a layout can give your model railroad purpose and an abundance of waterfront action. It's easy to model rail-marine operations using the vessels and shoreline detail parts produced in HO and N scales.

V.S. Roseman is a frequent contributor to Model Railroader magazine and a renowned hobby photographer.

Models of a Baltimore & Ohio RR tug, car float, and float bridge photographed on V.S. Roseman's HO scale Hudson River waterfront diorama capture the key components of rail-marine operation.



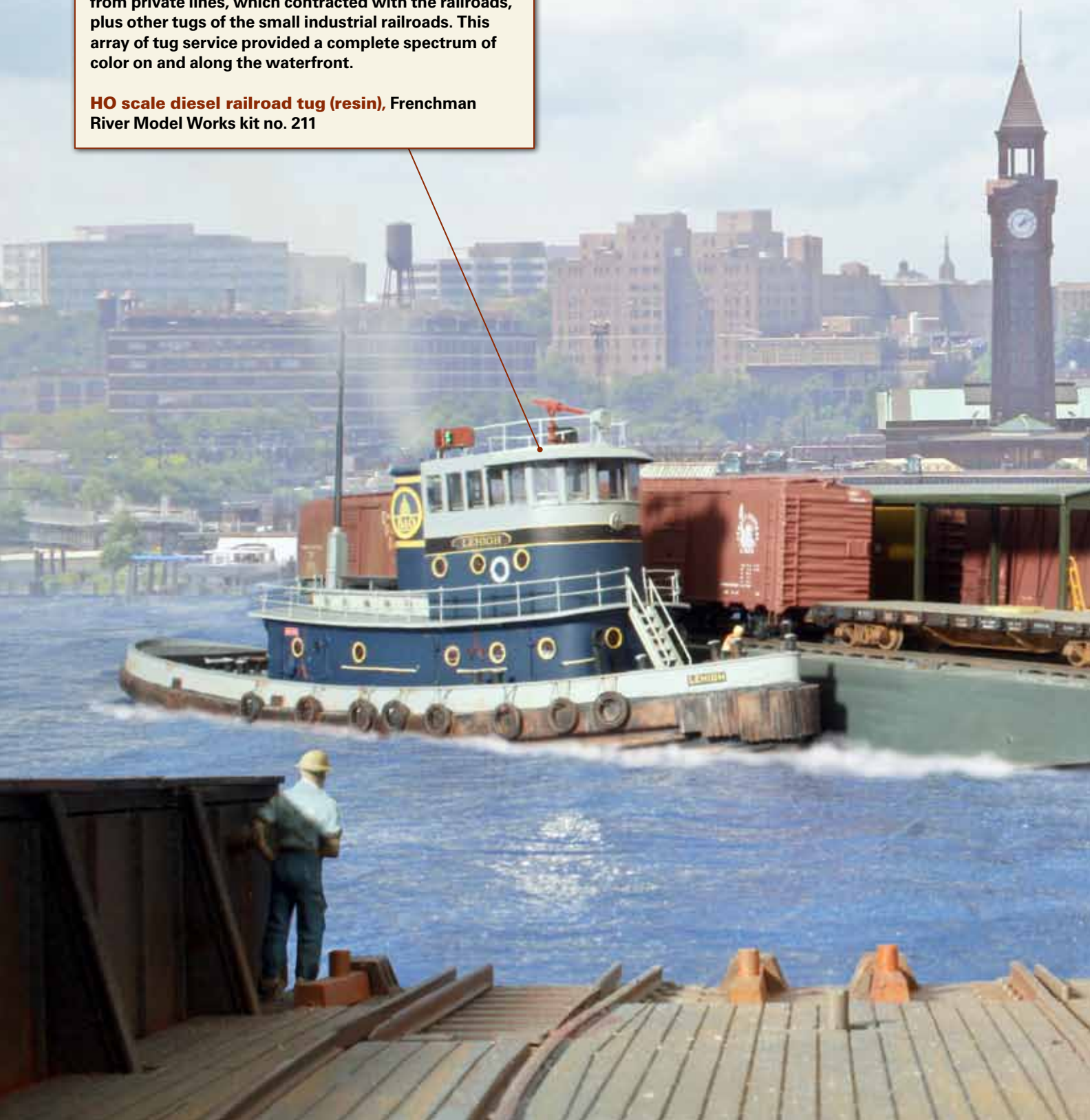
RAIL-MARINE VESSELS

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Tugboat. In the busiest era of rail-marine operation, tugs of the major railroads were often painted to match current diesel locomotive schemes. In New York Harbor, railroad-owned tugs operated alongside tugs from private lines, which contracted with the railroads, plus other tugs of the small industrial railroads. This array of tug service provided a complete spectrum of color on and along the waterfront.

H0 scale diesel railroad tug (resin), Frenchman River Model Works kit no. 211



Barge. Car floats, special unpowered flat-top barges equipped with rails, are some of the most significant vessels in rail-marine operation. Other craft owned by railroads include open and closed barges, which can be used to transport the same commodities that gondolas and boxcars haul in trains. In larger operations, such as New York Harbor, there were even cattle floats and floating grain elevators. While working in harbors, tugboats typically shove car floats from the side. However, in the rough waters of Chesapeake Bay, Pennsylvania RR (now Bay Coast RR) car floats ride behind larger ocean-going tugs. Conversely, on rivers, a towboat with a flat bow is often used to push car floats.

HO scale railroad car floats, modified from Walthers no. 933-3152 (out of production)



Pier float. An important variant of the car float is the pier float, also known as a platform float or station float, that permits railroads to serve piers that don't have rail connections. A typical pier float includes an elevated and covered freight platform down the center of the barge. On page 44 you'll see it's fairly easy to convert a common car float kit into one of these craft.



Car float. On a model railroad, a single car float or pier float is all that's needed to represent rail-marine operations, but two or more can tote an entire train. Walthers and other manufacturers have offered car float kits that can be easily shortened, lengthened, or modified to be a pier float. Also, some car floats had rudders and elevated wheelhouses, either amidships or at the stern. This allowed the float captain to help steer the unwieldy larger tow.

Float bridge. The docking arrangement for either car floats or car ferries is the car float apron, also known as a float bridge. These are typically a plate girder (or truss) bridge hinged to a sturdy set of pivots permitting it to move up and down with the tide and level of the craft being docked. For simpler installations, float bridges are supported by a pontoon. More modern float bridges are suspended from a gantry by cables and counterweights adjusted by electric motors.

HO scale car float apron, Walthers no. 933-3068 (out of production)



RAIL-MARINE OPERATING SCHEMES



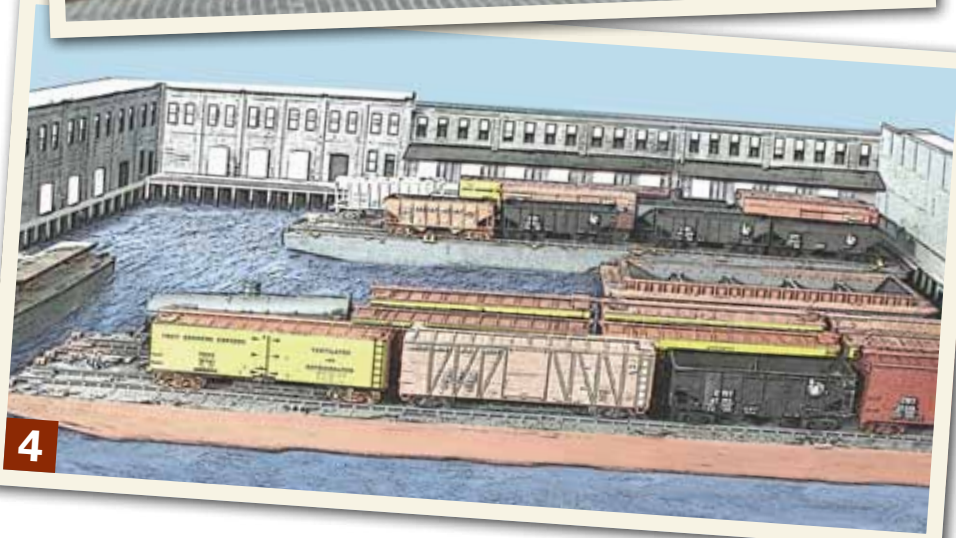
1



2



3



4

On prototype railroads, car floating involved several types of operations. In San Francisco, car floats were used to interchange cars from Atchison, Topeka, & Santa Fe and Western Pacific RRs with the Northwestern Pacific RR – a trip that spanned several nautical miles across San Francisco Bay.

In a typical operation, a train arrived at a car float yard via the main line, and a yard switcher set out cuts of cars to load on a barge. Often with the aid of idler cars to keep excessive weight off the float bridge, a switcher slowly shoved just a few freight cars onto a car float. To avoid capsizing the car float, the float or tug captain was always careful to keep the load balanced.

New York and Philadelphia had operations that also included lightering, the process of transferring loads such as perishable fruits from ocean-going freighters that were tied to a pier. Stevedores first loaded the fruit into railroad cars positioned on a pier float. Next, a tug towed the loaded barge to a pier that wasn't equipped with tracks. Upon arrival at the pier, the tug positioned the pier float for unloading from either the side or the end. After securing the float to a pier, stevedores used hand trucks or forklifts and portable ramps to unload into an adjacent warehouse.

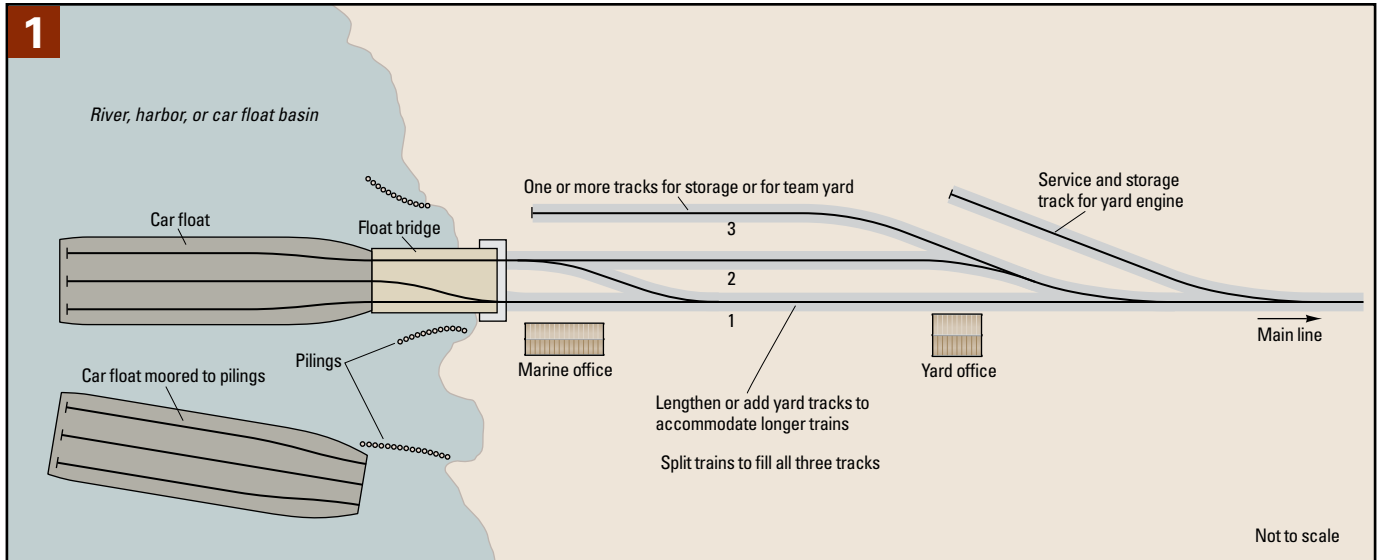
1. In position alongside an ocean-going freighter filled with imported fruit, a lone pier float with refrigerator cars stands ready for lightering service. Cranes from the ship will soon begin to transfer the freight.

2. In this view of New York Harbor, an HO scale Frenchman River Model Works tug decorated in Baltimore & Ohio's blue and gray livery sails for a pier that's inaccessible by rail.

3. Serving as a team track that floats, this pier float can be loaded or unloaded from either side or end. These were also called platform or station floats. Forklifts, hand trucks, and stevedores quickly move the perishable freight to a waterfront warehouse.

4. The author's color rendering illustrates how car floats of all types and sizes might fit into a barge basin that's intended to store vessels that have supposedly sailed away from ports on a layout.

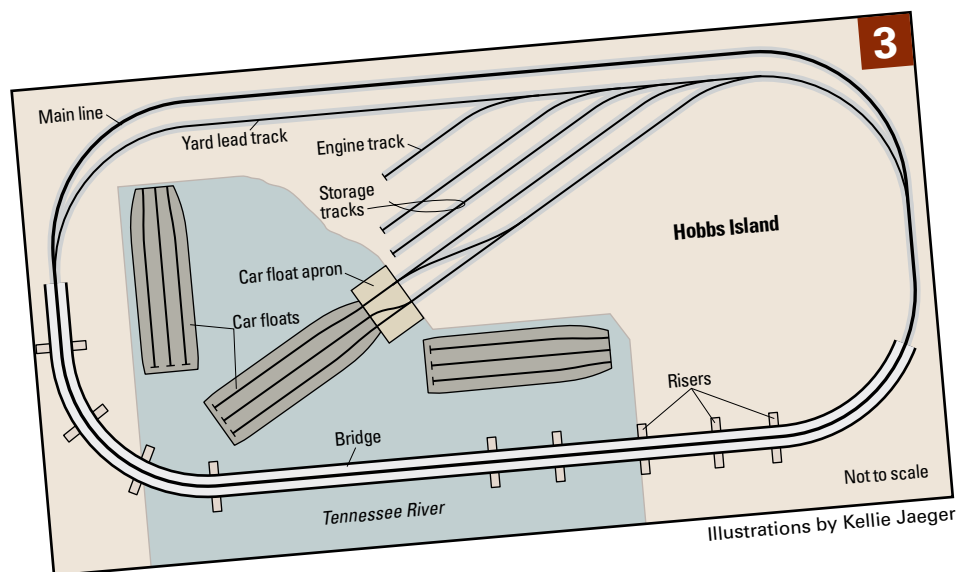
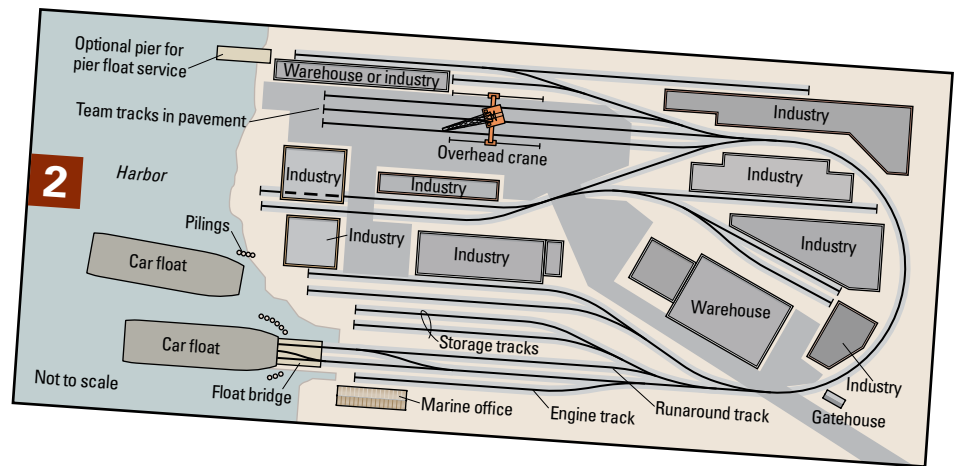
RAIL-MARINE PLANS FOR LAND AND SEA



The footprint for all the essential components of rail-marine operations doesn't have to be especially large. In fact, even a large car float and its associated components occupy a fraction of the space of a typical railroad yard. Depending on the size and type of cars, a car float can hold 10 to 18 cars. Accordingly, one or two car floats can be used to carry an entire train of a reasonable length.

On many layouts with a land-based theme, space isn't always available for yards at the end of the line. Some modelers use a fiddle yard, which has operators shifting individual cars by hand to create new trains. This work often takes place hidden behind or beneath the layout. When modeling a rail-marine terminal, no one has to be hidden to receive and dispatch trains. Additionally, the only unrealistic action comes from handling a loaded car float that has sailed into or out of port.

Just about any switching layout can be adapted to include a rail-marine element. Anything from a single railroad tug in a port to a layout with an entire basin filled with barges, freighters, and other maritime models can be used to integrate a rail-marine theme. While the track plans shown here use a minimal amount of track, there's ample opportunity to combine schemes that create a much larger layout with multiple ports.



1. Float yard design. Many freight yards near tidewater include a float yard. A locomotive and idler cars move cars between the car float and float yard.

2. Atlantic Terminal RR. As depicted on this track plan, some industrial railroads interchanged with larger roads solely by car float operations.

3. Gadsden & Northwestern RR. This example shows how a basic loop can be amended to include authentic rail-marine operations.

MODIFIED MARITIME MODELS



A Walthers HO scale car float kit provided the starting point for V.S. Roseman's pier float model. His modifications to the original kit included reducing the length of the barge, removing one track, and adding a covered platform.

To model a distinctive pier float in HO scale, I reworked a Walthers no. 933-3152 car float kit. Although this particular plastic kit is no longer available directly from Walthers, you can still find it periodically through online sources and at some local hobby shops.

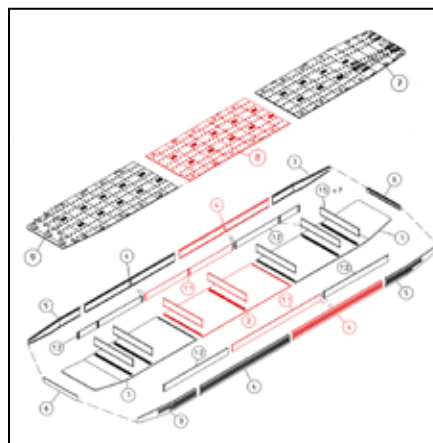
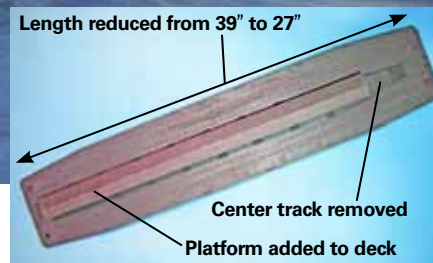
The Walthers car float closely resembles those built for the Lehigh Valley RR, although it's typical of the large vessels built for many railroads operating in New York Harbor. Fortunately, it's also similar to the floats in other ports with rail-marine operations, and can even be used as the basis for powered barge-type car ferries operating on the Great Lakes.

Shorten the length

Measuring approximately 39" in length (283 feet in HO scale), the

Walthers car float kit makes a huge model, one that might be difficult to handle on a small layout. Since car floats of all sizes and types populate major harbors, I shortened the length of the kit. As shown in red on the modified assembly diagram (right), simply omitting the center segment yields a 27" (195 scale feet) barge that's similar to smaller car floats.

In addition to shortening the length of the car float, you can also modify the number or configuration of tracks. If you prefer to make only minor changes to the track arrangement, first shave off the track supports, attach .030" thick styrene pads, and use contact cement to attach the supplied plastic rails. As an alternative, by simply installing the original deck upside down you get a flat surface on which to install an entirely new track arrangement.



Modified hull. To shorten the barge, remove parts shown in red.

To build my pier float, I removed the center track from the original kit configuration and kept the outer tracks intact.

Pier float modifications

After shortening the length of the barge, I removed the track supports from the turnout and about 1" of the center track. The additional supports along the center track can also be removed, but they won't be visible after installing the platform.

To remove the visible supports, I used a carbide cut-off wheel and a flexible-shaft motor tool. When using this type of tool, be sure to wear proper eye protection and work deliberately to avoid gouging the plastic parts. After making the rough cuts with the cut-off wheel, I used a hobby knife with a chisel blade and small file to remove the nubs.

Maritime model and detail parts suppliers

Products offered in HO and N scale

■ BlueJacket Shipcrafters

(www.bluejacketinc.com): freighters, tugs, barges, and parts

■ CMR Custom Model Railroads

(www.cmrtrain.com): tugs, barges, and structures

■ Frenchman River Model Works

(www.frenchmanriver.com): freighters, tugs, and parts

■ Sea Port Model Works

(www.seaportmodelworks.com)

■ Sheepscot Scale Products

(www.sheepscotsscale.com): barges, structures, and parts

■ Sylvan Scale Models

(www.isp.ca/sylvan/): freighters, tugs, barges, and parts

■ Walthers (www.walthers.com):

tugs, barges, structures, and parts

Next, I established the minimum clearance for the platform by moving my longest car along the slightly curved sections of track. I held a sharp pencil alongside of the car to lightly scribe a $\frac{1}{8}$ " clearance line along the deck.

After defining the minimum clearance, I began assembling the platform using styrene components and cyanoacrylate adhesive (CA). I built the platform $\frac{1}{2}$ " high to match the height of most freight car floors. First, I made the $\frac{1}{2}$ " tall deck supports using .100" square styrene. Along the tops of these supports, I installed .100" square styrene strip to support the platform. To complete the platform base, I used CA to add .040" styrene sheet material over the supports.

Using .100" square styrene, I made additional supports to hold the canopy $1\frac{7}{8}$ " above the deck. On top of the canopy supports I added .080" square strips that run the length of the platform. To form the canopy cover, I used .030" sheet styrene and added a bulkhead at every pair of vertical support columns.

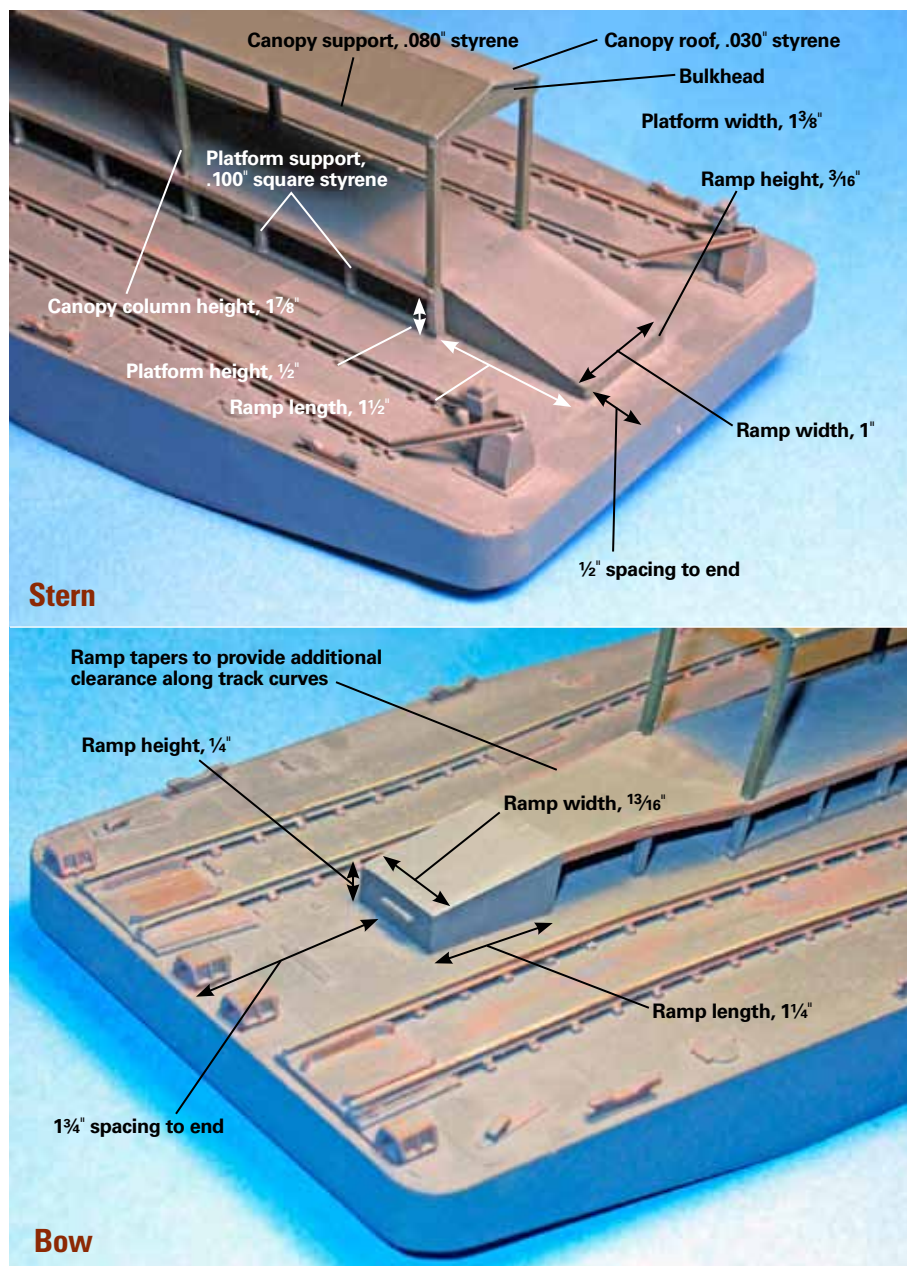
Both ends of the platform terminate with an exposed (uncovered) ramp that angles downward to accommodate a portable plank bridge. Dock laborers use these ramps to move cargo on hand trucks and forklifts onto shore and into nearby warehouses.

Finishing details

The fittings included in the Walther's kit are common types and are well suited for my pier float model. To model a specific vessel, you can easily change the style of mooring cleats or bumpers by using aftermarket parts from Sheepscot Scale Products, Frenchman River Model Works, or BlueJacket Shipcrafters.

I reproduced a Central RR of New Jersey steel pier float with plain, smooth sides. Again using my motor-tool and cut-off wheel, I removed the raised horizontal stringers from the side panels. Replacing the kit's hull components with smooth sheet styrene would have been another option.

Although my pier float has none, these vessels sometimes have handrails or lifelines along the perimeter. I elected to omit them from my model, as they can obstruct the placement of some rail cars along the platform. If you do install handrails, try using eye pins to form stanchions and thread brass wire through the eyes.



Photos of the stern (top) and bow (bottom) on V.S. Roseman's pier float model show many of the details he added to a modified Walther's HO scale car float kit.

Creating appropriate railroad or fleet signs is another detail option. Until the 1930s these were very common. To make these signs, use either decals or computer-generated labels mounted to sheet styrene.

Painting and weathering

When painting an assembled car float or pier float, the deck can be the same color as the hull of the vessel. Common colors for the prototypes included oxide red, dark gray, and black. Bumpers could be painted either the color of the deck or bright yellow or red.

Just about any joint, attachment, or junction of two parts on the prototype

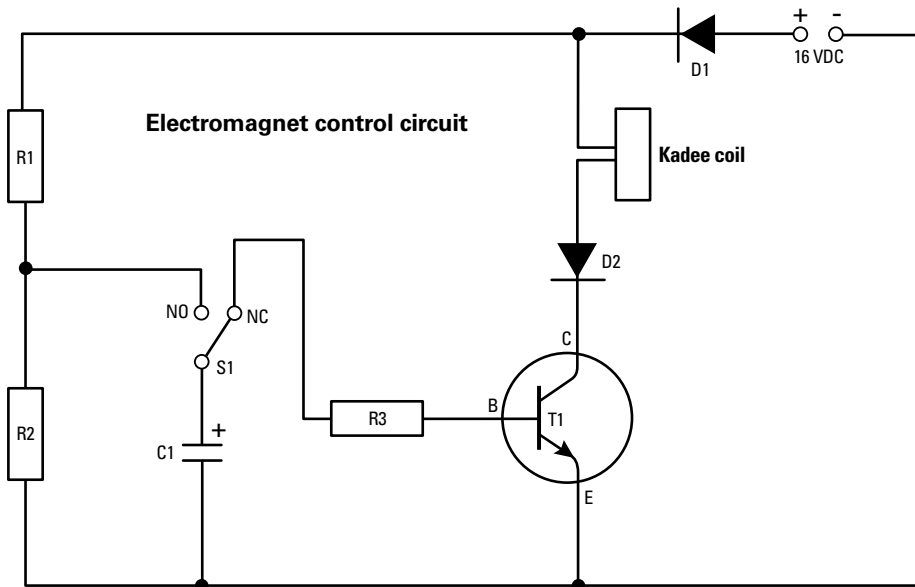
eventually showed signs of corrosion. Rust colors can range from pale orange to deep red-brown to black. It was also common to see streaks of red or lighter gray extending from the bitts and cleats to the sides of the hull.

An airbrush or small round water-color brushes lightly loaded with weathering colors works well for applying these weathering effects. As with most weathering efforts, be patient and allow the effects to build over multiple applications. After completing these subtle details, you'll be rewarded with a car float or pier float model that's just as impressive as any locomotive or rolling stock on your layout. **MR**

Hands-free electromagnet uncouplers

This simple circuit activates an uncoupler for 20-second intervals

By Jean C. Piquette • Photos by the author



Circuit diagram. This diagram shows how author Jean Piquette wired this hands-free HO scale electromagnet uncoupler control circuit. The letters identify the three power transistor leads: B is the base, C is the collector, and E marks the emitter. On switch (S1), the NC letters indicate its normally closed contacts.

Kadee's Magne-Matic line of HO knuckle couplers created a major change in the hobby. Introduced in 1959, these new couplers featured all-metal construction and movable knuckles actuated by permanent magnet uncouplers concealed in the track.

A small vertical lip was added inside the cast knuckles to keep the cars coupled as long as the train was stretched when it passed over a permanent uncoupling magnet, but any bunching of the slack allowed the knuckles to open.

By June 1962, Kadee moved to a wider magnet that was used to actuate and add a delayed action feature to its couplers. Upon separation, the wider magnet moved the open coupler heads farther to the outside so only the facing coupler guard arms engaged as the cars were shoved back together. With the couplers in this "delayed" position, a car could be pushed off the magnet and shoved for some distance to spot it at any location beyond the uncoupler.

Push-button control

Modelers quickly realized that an electromagnet uncoupler was better for busy locations to prevent accidental uncouplings. An electromagnetic uncoupler operates with a push-button that must be actuated to keep the power on. Releasing the button stops the uncoupling action. However, many operators have difficulty using a hand-held throttle and pressing the button at the same time.

This circuit requires only a brief two or three second push of a button to energize the electromagnet for 20 to 25 seconds. After that, the current to the electromagnet shuts off automatically, giving an operator plenty of time, and both hands on the throttle, to complete the uncoupling. And the best part is the circuit is easy to build and understand.

Test track

I found it very helpful to build a test track so I could try things out during circuit construction. My test bed is a 48"

Materials list

Digi-Key

1N5402FSCT-ND diode (D1, D2)
493-1049-ND 10,000 μ F 16V capacitor (C1)
497-2563-5-ND power transistor (T1)
PPC1D25.0CT-ND 25 Ω 1W resistor (R2)
PPC75W-3JCT-ND 75 Ω 3W resistor (R1)

Kadee

309 uncoupler kit

Mouser Electronics

71-FP01/2470RG5605EK 470 Ω $\frac{1}{2}$ W resistor (R3)

RadioShack

275-1549 single-pole double-throw momentary pushbutton
276-149 perforated project board

long L-girder supported with a couple of 1 x 4 blocks that make it freestanding on the workbench. See **fig. 1**.

Kadee's no. 309 delayed-action electromagnet uncoupler mounts beneath the ties, so I assembled one and installed it near the center of my testbed. Then I added flextrack at both ends to produce a test track 3'-9" long.

Power supply

The power supply must deliver sufficient continuous 16VDC current or the electromagnet won't pull the couplers far enough aside for delayed uncoupling. Most DC power packs don't produce that much current, so the Kadee uncoupler comes with a rectifier and a filtering capacitor that will convert a pack's 18VAC accessory terminals into 16VDC.

The “hands-free” circuit

Following the diagram at left, I mounted and wired most of the components on a piece of perforated project board except for the Kadee coil (the electromagnet), the capacitor and rectifier for the power supply, and the single-pole double-throw (SPDT) momentary push-button for the control panel. See **fig. 1**.

The power transistor (T1) in the circuit acts as a switch or a valve that controls the current to the electromagnetic coil. This transistor has three inputs which must be properly identified to wire the circuit correctly. At first glance, the power transistor only seems to have two connections, but the metal case serves as the third input. It's necessary to solder a wire to the case to use the transistor's collector input labeled “C” in the circuit diagram.

To tell the base and emitter inputs apart, notice that the two leads in **fig. 2** are slightly off-center to the left. In this position, the lower lead is the base “B”, and the upper lead is the emitter “E” in the circuit diagram.

Diodes D1 and D2 also have to be oriented properly to work correctly. Each diode acts much like a check valve in plumbing as they permit current to flow in only one direction. Diodes are marked with a silver band that denotes the “cathode,” or negative, end of the diode. The positive end of the diode is called the “anode.” The arrows on diodes D1 and D2 in the diagram point in the direction of current flow. These arrows also point from the anode end to the cathode end.

The leads on transistor T1 and diodes D1 and D2 were too thick to slip through the holes in the perf board I used, so I drilled out the necessary existing holes using a no. 43 bit (.089" diameter).

Another component that needs to have its leads identified is electrolytic capacitor C1. The capacitor has a long (positive) lead and a shorter (negative) lead. The long positive lead connects to the center terminal of switch S1, while its shorter lead connects to the ground coming from the negative terminal of the power supply.

How it works

Transistor T1 controls the output of current to the electromagnet. It turns on when current is applied to the base of the transistor by capacitor C1. When switch S1 is pressed, the capacitor is charged by the voltage coming from resistors R1 and R2. The capacitor charges quickly, requiring only two or three seconds to reach full voltage.

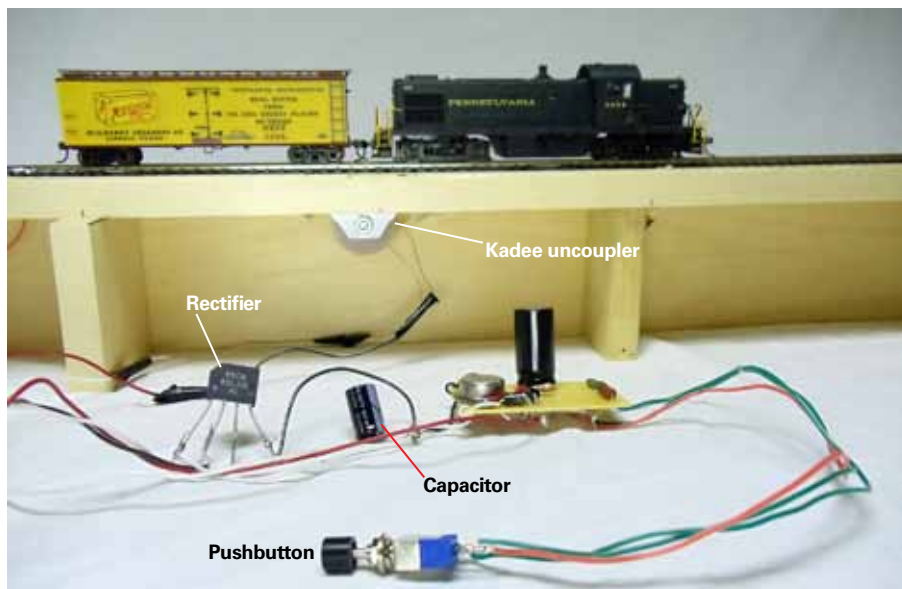


Fig. 1 Test track. Jean made this test track to develop his control circuit. The rectifier and filtering capacitor are included in Kadee's no. 309 uncoupler to convert accessory AC from a power pack to the DC used by the electromagnet.

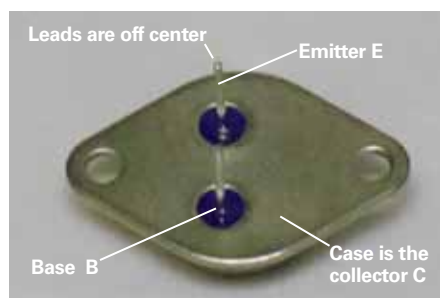


Fig. 2 Power transistor. With the two leads positioned off center to the left, the top one is emitter “E” and the lower one is the base “B” in the circuit.

Once the push button is released, the capacitor discharges through resistor R3, attached to the transistor's base. Resistor R3 has a larger resistance that produces a much slower discharge of the capacitor, and it limits the amount of current flowing into the base to a relatively low level.

While the current supplied by the capacitor decreases rapidly during discharge, the current that flows through the electromagnet remains constant for about 20 seconds. This happens because the current supplied by the capacitor causes the transistor to remain open so current flows to the electromagnet.

Be aware that resistors R1 and R2 become quite hot shortly after the power to the circuit is turned on. This is normal. Although the recommended input voltage is 16VDC, the circuit is designed to allow the use of an input voltage as high as 20VDC. If you do use a 20VDC power supply, resistor R1 will be dissipating 3W and resistor R2 will be handling 1W of heat. And they will still get

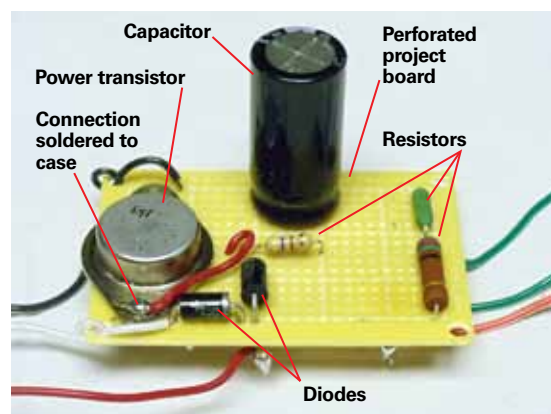


Fig. 3 Circuit assembly. Here's the assembled circuit board. The resistors get hot during use, so air circulation is important to help keep them cool.

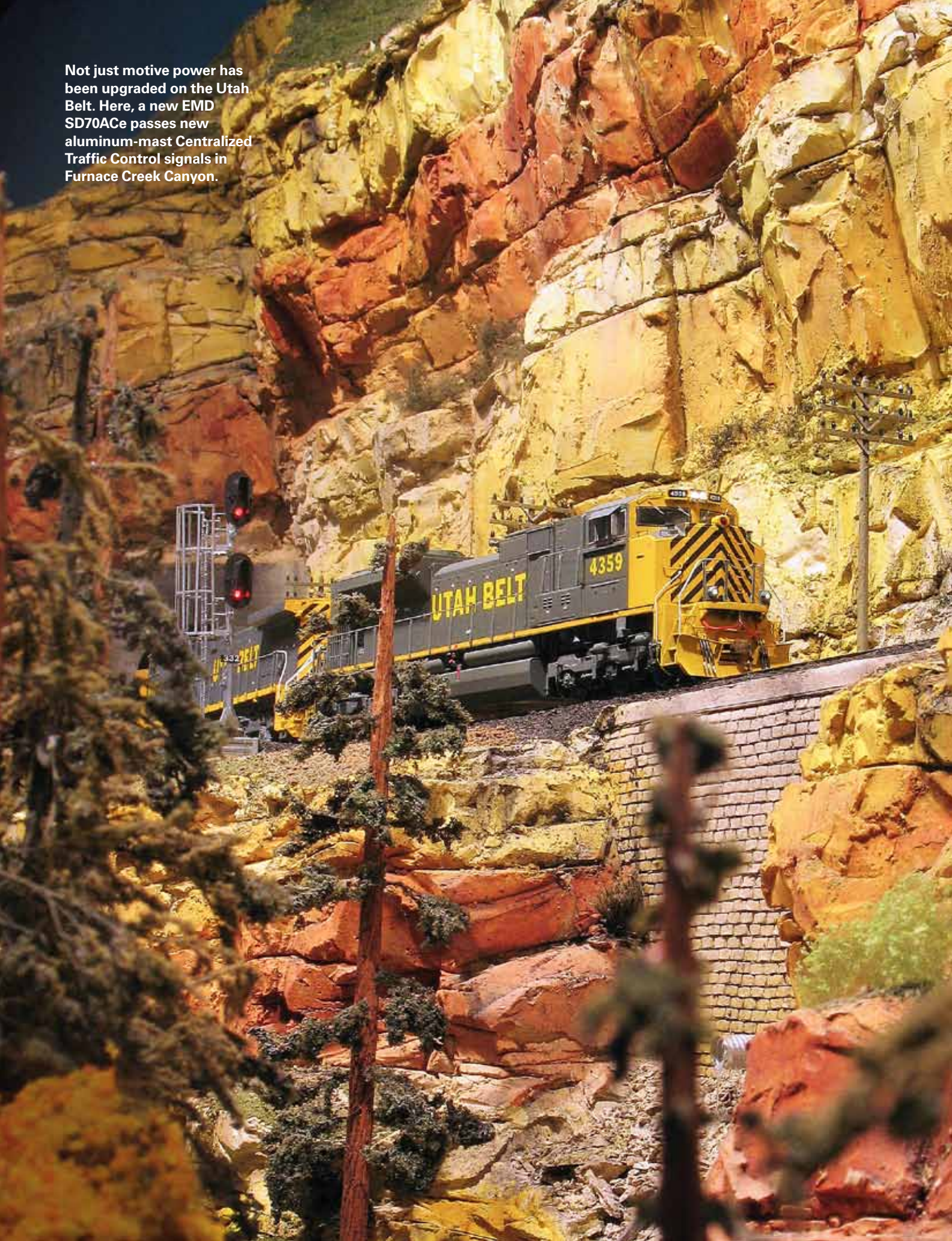
pretty hot even if you use only the recommended 16VDC. [Substituting a 5W resistor for R1 and a 3W resistor for R2 should eliminate most of the heat problem. – Ed.]

Diode D1 guards against wiring the input voltage backwards. If that happens, no current can flow in the circuit because diode D1 will block it. Diode D2 prevents a “kickback” voltage that might damage the transistor when the electromagnet is de-energized.

For a look at ways to use magnetic uncouplers on a layout, see Andy Sperandio's column on page 94. [MR](#)

Jean Piquette is a retired physicist who has been in the hobby for more than 40 years. His current HO layout is the Cobleskill & Ballston Point RR. He and his wife, MariceAnn, live in Rhode Island.

Not just motive power has been upgraded on the Utah Belt. Here, a new EMD SD70ACe passes new aluminum-mast Centralized Traffic Control signals in Furnace Creek Canyon.



Signs of the times on the UTAH BELT



Modernizing motive power, signals, and more on an always-current model railroad

By **Eric Brooman** • Photos by the author

The Utah Belt has been evolving for more than 30 years. In the early 1970s, Electro-Motive Division F7s, GP9s, and SD9s were still holding their own, along with 40-foot boxcars and cabooses. The '80s brought double-stacks and flashing rear-end devices (FREDs). By the '90s, safety cabs were becoming

common. The turn of the century brought General Electric locomotives and alternating-current (AC) propulsion, breaking the EMD and direct-current stronghold on the railroad.

And as the calendar turns to the second decade of the second millennium, the ever-changing scene of modern railroading continues on the Utah Belt.

Long a loyal customer of Electro-Motive Division, the Utah Belt has started branching out to buy from other motive power manufacturers. Here, National Railway Equipment 3GS-21B Genset no. 2100, purchased for its ultra-low emissions, switches industries in Benton, N.M.

The change to AC power

The UB has always looked for the latest in motive power technology. However, being a smaller Class 1, the road prefers to let larger lines test the newest offerings before investing in multi-million dollar locomotives. The UB has been pleased with the performance of its General Electric AC engines. Their lower



A less than welcome sign of the times is the appearance of graffiti. This boxcar, itself a rare sight on a road increasingly dominated by intermodal traffic and unit coal drags, also carries a flashing rear-end device (FRED).

maintenance costs and improved tractive effort have won over management.

The GE AC4400CWs have worked well for the UB, but when new engines were needed in 2010, the motive power department went back to its longtime supplier, EMD. Its latest offering, the SD70ACe, was receiving excellent reviews from the big Class 1s, and as a result EMD was beginning to regain its position as the premier locomotive builder. The 4,300 horsepower rating, AC drive, ease of maintenance, and shop force familiarity with EMD products were the determining factors in the decision to purchase the SD70ACe.

Located in the Rio Grande Valley, the town of Benton, N.M., has long had air quality issues. The UB has a major yard and engine terminal there, as well as switching several industries in close quarters. City officials asked the railroad to reduce locomotive emissions, especially in the city streets.

After looking into several of the low emission builders, management decided on National Railway Equipment's 3GS-21B. This super-low-emission engine now prowls the Benton industrial district. With the capability of running on any combination of its three 700 hp

Cummins engines, this locomotive is helping improve the town's air quality.

Older power continues to be retired from the roster as major repairs are required. Many of the SD40-2s and SD50s are running out their last miles in helper service out of Benton. The mine turns that operate out of Benton are still the domain of the SD40-2s, with local mixed freights using GP38-2s.

Train crews still praise the SD40-2s for their ride and pulling abilities. These units may be around for a while, undergoing major shopping and rebuilding. The SD50s, however, are notorious fuel guzzlers and will likely be retired when major repair issues arise. Yard switching and transfer duties continue to be held down by MP15DCs.

The Southern San Pedro, a desert short line that interchanges with the UB at Descanso, has also undergone changes. The venerable Alco which served so faithfully has finally been retired, due mainly to scarcity of parts in this remote area. A second-hand EMD SW1000 was purchased from a used equipment dealer. The SSP's unique caboose, which had bay windows as well as a cupola, was donated to the Chamber of Commerce in El Vado, the line's southern terminus.

Updating the rolling stock

Anyone who's been trackside in the last several years can't help but notice the changes taking place in rolling stock. Unit trains and intermodal are prevalent. Although there are still large numbers of general merchandise trains, these



are dominated by covered hoppers and a huge variety of tank cars. The once ubiquitous boxcar is seen less and less often.

Another major change taking place in rolling stock is the decline of equipment owned by the major roads. Reporting marks representing a wide array of private owners and leasing companies have replaced the familiar railroad initials.

Along with these changes, government-mandated reflective stripes are gradually being applied to all equipment. Locomotives and cars of the 2000s are required to have reflective tape applied to the side every 10 feet to make them more visible at night. New equipment has this applied at the builder, with older equipment being taped as quickly as possible, often in a slap-dash fashion. It may not seem like much, but as anyone who has ever been around a rail yard

Now on ModelRailroader.com

Want to see more of Eric Brooman's spectacular Utah Belt? The track plan is available for download from our website. Look under "Online Extras" at www.ModelRailroader.com.





at night or an unsignaled crossing after dark can testify, the reflective markings can be a real lifesaver.

One less-welcome decoration that has recently appeared on the UB is graffiti. As a testament to our current culture, it's a rare sight to see a freight car that hasn't been defiled. Since the UB is always set in the present, several cars have been so humbled, but not as many as would be required to appear truly prototypical.

Retirements

The Utah Belt's ancient wood-sided flanger has finally been retired. That steam-era survivor has been replaced with a steel flanger that now helps keep the line open during the winter months. The original outlived what would be its normal useful life because it was used occasionally (some years, not at all) and

was replaced only after it became totally unserviceable. Resourceful shop forces built the new flanger, salvaging as much as possible from the old.

Another steam-era icon has likewise been upgraded. Years of exposure to the elements have led to a gradual replacement of all of the roads' Centralized Traffic Control (CTC) signals. The cantilever signal bridges were especially susceptible to the weather. Since the government hasn't required railroads to position signals on the engineer's side of the track (where the track being controlled is obvious) since 1985, the signal bridges have been replaced with two standard mast signals. The UB chose new all-aluminum masts with a full ladder safety cage and a hooded Type D head. Ease of maintenance and visibility were determining factors.

The Utah Belt's customers have been modernizing, as well. A Utah Belt train led by SD60M no. 3867 passes the U.S. Carbon mine in Descanso, N.M., where aluminum-bodied coal hoppers are filled under a new flood loader.

Structures have also changed with the times. All remaining wooden buildings owned by the railroad have been replaced by prefabricated metal structures. The one exception is the depot at Benton. The 100-year-old example of classic railroad architecture was sold to the city of Benton at a nominal cost and was restored. It now houses the Benton Historical Society's rail history museum.

Other buildings have been updated, abandoned, or replaced by more modern businesses. A noticeable change has taken place at the two U.S. Carbon mines in the area. Increased demand for western



The Utah Belt is ready for winter with this new steel flanger, cobbled together in the UB's own shops and including some salvaged parts. It replaced the wood-bodied flanger that was one of the last relics of the line's steam days.

Older EMD SD50s are reaching the end of their useful lives on the Utah Belt, relegated mainly to helper service out of Benton, N.M. This pair, pushing a coal drag across Coldwater Creek, will probably be retired soon due to their high fuel consumption.

coal has led the company to expand and modernize its facilities. Large storage silos and more efficient loaders have changed the appearance of the two mines considerably.

More change to come

Railroading will continue to change in the years to come, meeting the demand for more efficient ways to deliver the materials the nation requires for a strong economy. The Utah Belt remains committed to meet that challenge. [MR](#)

Eric Brooman has been building, operating, and writing about his HO scale Utah Belt RR for more than 30 years. He has written numerous articles for Model Railroader and its special issues.



Lance Mindheim's scratchbuilt N scale no. 6 turnout looks good and delivers smooth operation. He builds his turnouts to National Model Railroad Association standards using code 55 nickel-silver rail with printed-circuit board and wood ties.

How to scratchbuild an N scale turnout

Step-by-step instructions for cutting ties, making parts, and soldering rail

By Lance Mindheim • Photos by the author

During a recent flashback to my early years in N scale, I recalled a veteran HO modeler telling me early on that I needed to learn how to make my own turnouts. His message was delivered in a way that made me think that's what everybody did. I didn't even question it at the time, but looking back this has proved to be some of the best modeling advice I've ever received. It also resulted in a lifetime skill that I'm still using today.

It's easy to assume that the ideal candidate for learning to scratchbuild turnouts is the seasoned modeler with many years of experience under his belt. While that may be partially true, I think the best candidate is any person who is short on funds but has ample free time.

My hope is that readers will come away from this article with the mindset

that building turnouts is a skill anybody can learn and use on any of the smaller scale model railroads.

Reasons to learn how

There are many reasons to learn how to build your own turnouts:

Lower cost. After you acquire the basic tools, hand-made turnouts cost much less than their ready-to-install commercial counterparts.

Build turnouts to fit. You aren't limited by what turnouts are manufactured and you can build with a smaller rail size that may not be available in commercial turnouts.

Quality. Once you get the hang of it, you can build a turnout to closer tolerances and of higher quality than most commercial products.

Useful skills. Even if you ultimately decide to use commercial turnouts, the

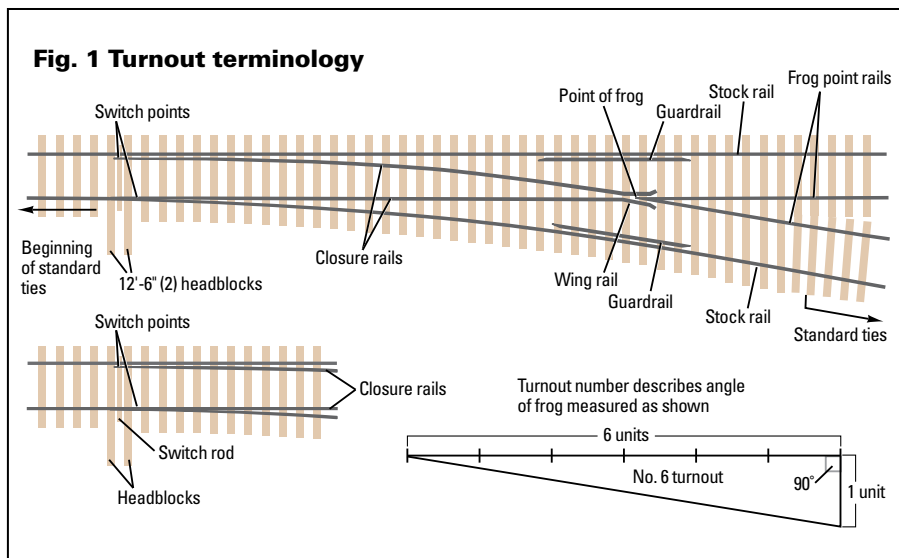
skills acquired in hand-making your turnouts come in handy when you need to fix, modify, or tune a commercial turnout. Turnout building skills also translate to making crossings, cross-overs, and other custom trackwork.

Saves time. With many turnouts being made overseas, it's common to have long time periods when a specific commercial turnout is out of stock. Making your own saves you the wait.

Making your own turnouts is especially valuable in N scale because of the limited selection of turnouts in N and because you can build turnouts that are more reliable electrically and mechanically than most commercial products.

A handy start

Many years ago, when I decided to teach myself to scratchbuild turnouts, I stumbled upon an exceptional article



by Tony Koester in the December 1989 issue of *Model Railroader*. The article walks the reader through every step of the process. However, the article was written for HO scale modelers, so I had to modify Tony's procedures somewhat for N scale.

The primary modification involved the ties that Tony used. Wood ties aren't practical for N scale, as the spikes and flange clearances are just too tight. My revised techniques follow Tony's article, but I used ties made of printed-circuit (PC) board so the rails can be fastened in place with thin soldered joints instead of spikes. I also used code 55 rail and slightly modified his technique for building the frogs.

Be realistic

Remember that you're learning a new skill, so it's unrealistic to think that the first turnout will be usable. In my experience it takes three or four tries to really get the hang of it – a small price to pay for such a valuable skill.

The terms shown in **fig. 1** are commonly used to identify the major parts of a turnout in both model and prototype applications. Using the proper terms makes it easier for everyone to understand what's going on.

Printed-circuit board ties

For my turnouts, I use ties cut from printed-circuit (PC) board. These ties are cut to the same scale size as a wood tie so they're interchangeable. Factory-cut PC ties can be purchased from specialty manufacturers such as Clover House (www.cloverhouse.com) and others.

A little advance preparation will make soldering the rails to the ties a breeze. First, I use a hot 35 or 40-watt pencil-style soldering iron. Second, I recommend using .032"-diameter rosin core solder, as it's easier to control during application. And third, I've found that high quality flux assists in a rapid heat transfer. **Figure 2** shows the Team Trinity brand of flux I prefer.

Soldering the joints between the rail and the ties is much easier if I tin both surfaces first. To tin a tie or rail base, I wipe some flux on the metal surface with a cotton swab. Then I put just a trace of solder on the hot soldering iron's tip and wipe it across the metal surface to apply a thin layer of solder without any globs or bumps. I try to make it look like a layer of paint. See **fig. 3**. I prefer to tin the long, uncut PC ties first, although you can also tin them after they're cut down to the proper lengths for the turnout.



Fig. 2 Good soldering materials. High-quality liquid rosin flux, a roll of small-diameter rosin core solder, and a pencil soldering iron go a long way toward making this project a success. The important thing is to use the flux and solder sparingly to minimize the cleanup afterward. When the heat, flux, and solder are applied properly, the finished joints are bright and shiny.

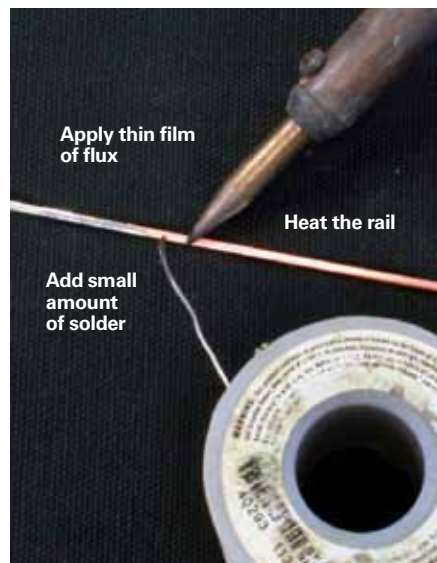


Fig. 3 Tinning parts. To tin a strip of printed-circuit (PC) board (PCB) tie, wipe a thin film of liquid flux along the tie surface with a cotton swab. Apply a small spot of solder and gently rub it back and forth with your hot iron until it has the appearance of a thin layer of silver paint. Use a light touch, as too much heat and pressure may cause the foil to separate from the substrate.

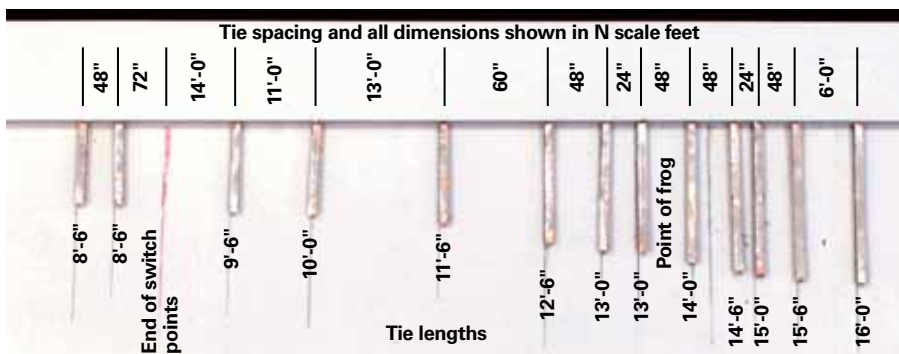


Fig. 4 Assembly jig. A piece of wood with a strip of .060" styrene mounted along one edge serves as a jig to hold the PC ties in place during the soldering.

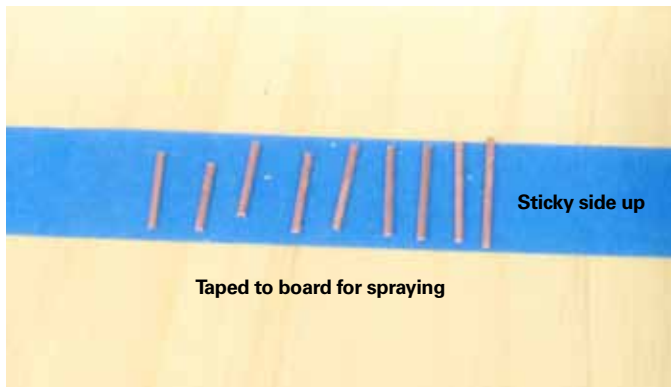


Fig. 5 Adhesive application. A piece of masking tape is pinned down, sticky side up, so Lance can spray one side of the PC ties with adhesive for final assembly of the turnout. A little lacquer thinner releases the PC ties later on.



Fig. 6 Rail filing jig. Lance made this rail shaping jig by using a razor saw to cut a narrow groove in a smooth piece of wood. He turns the rail on its side so the narrow edge of the rail base fits into the slot for cutting and filing.

The assembly jig

I begin building a turnout by cutting some PC ties, tinning them, and then temporarily gluing them to a simple jig.

I constructed my assembly jig from a piece of wood with a strip of .060" styrene cemented along one edge as a backstop. Using a small square as a guide, I marked the PC tie locations on the jig as shown in **fig. 4**. There's some flexibility in the quantity and locations of these PC ties, so I wasn't afraid to add a few extras. The main thing is to make sure there's enough support around the frog and beneath the closure rails. I also found it's easier to make the ties slightly long and trim them later.

After cutting my PC ties to length, I glue them to the jig to keep the ties from moving as I position and solder the rails. I stick the ties face down on a strip of masking tape, as shown in **fig. 5**, spray their backs with 3M Super 77 adhesive, and press them firmly in place on the jig.

Fabricating parts

I used code 55 rail in my turnout, but don't be afraid to try code 40 rail. The smaller size of code 40 means there's less material that needs to be filed away to shape the parts, making it relatively easy to work with. Two lengths of rail are needed for each turnout. Some hobby dealers sell individual pieces of rail so you don't have to purchase an entire bundle. You can also purchase a single piece of flextrack and carefully remove the plastic ties without kinking the rails.

Shaping the various rails takes a fair amount of filing, so I needed a way to hold the rail securely while I was working on it. HO modelers typically clamp the rails in a jewelers vise, but this won't work in N scale because the base of the rail is too small for the vise to hold it without damage. My solution was to cut

The NMRA standards gauge

This handy tool was introduced by the National Model Railroad Association (NMRA) to make it easy for modelers to check couplers, track, and wheels for conformance to the group's established standards. The gauges are offered in versions for O, On3, On2½, Sn3, HO, HOn3, and N scales and they're available from most model railroad hobby shops or directly from the NMRA website at www.nmra.org.

Each sheet metal gauge has a series of pins and notches along its edges which are sized to check the dimensions of specific items. In the smaller scales the gauges are shaped like the normal railroad clearance diagram.

In N scale there are practical limits to how small a clearance one can see and set with the NMRA gauge. The main tolerances I focus on are the minimum gauge clearances around the frog and setting the flangeways between the frog rails and the guardrails. I set all of my other turnout dimensions midway between the gauge's minimum and maximum limits. — L.M.

a piece of smooth pine 1 x 2 about 6" long and then cut a narrow groove parallel to the grain with a few passes of a razor saw. See **fig. 6**. I press the base of the rail into the thin slot so I can hold it with my fingers as I file the part to shape, as shown in **fig. 7** on the next page.

All of the parts of my turnout began as straight rail that I cut and filed to shape including the closure, frog, guard, and stock rails. The dimensions I used for all of these parts are shown in **fig. 8** on page 56.

Then I tinned the bottoms of all the rails to aid in soldering them to the ties on the jig. As I made each piece I cut most of them a little long so I could trim

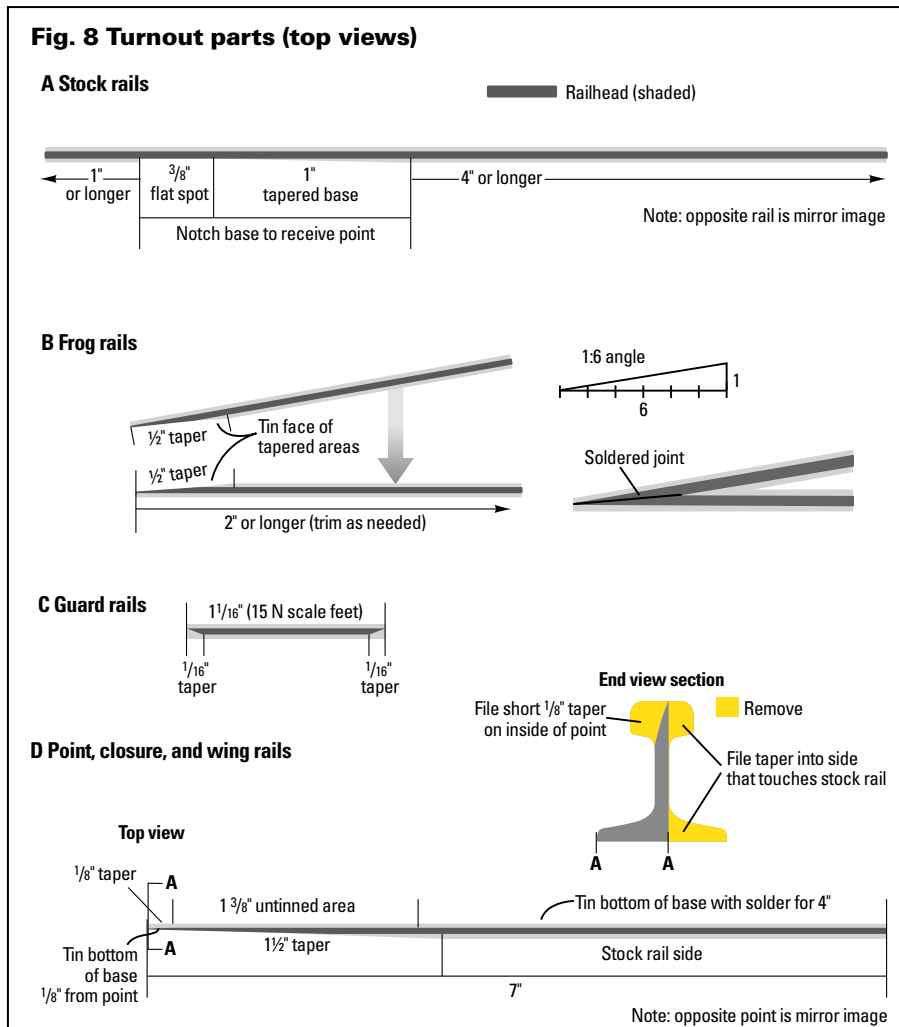
them to exact length later (the only exception was the guard rails).

Shaping the stock rails

To shape the two stock rails, which are mirror images of each other, I started with sections of rail 6½" to 7" long. I pressed the base of one into the groove in the wood block. Starting 1" from the end, as shown in **fig. 8**, I filed a 1⅜" long tapered notch into the base and web without filing into the rail head. Then I made a second rail that has the opposite side of the base filed away. See **fig. 7** on the next page. These notches aren't prototypical, but they help the point nestle into place where it's less likely to pick a



Fig. 7. Filing the stock rail. Pressing the base of the rail into the slot in the rail jig made it easy to hold the rail as Lance filed the tapered notch into one of the stock rails. The second stock rail will be a mirror image of the first.



passing wheel. I then tinned the bottom of these stock rails, taking care to keep any traces of solder out of the notch.

Frogs and guard rails

For the frog, I cut two sections of rail 2" long. Starting at one end, I filed a 1/2" long taper on one face following the dimensions shown in **fig. 8**. At this point I didn't worry about making an exact 1:6

frog angle. Next, I took the second rail and filed a taper on the opposite side to make a mirror image of the first piece. Finally, I tinned the bottom of the rails and the faces of the tapers. See **fig. 9** on the next page. Then I set these two pieces aside for final assembly later on.

The guardrail dimensions and details are also shown in **fig. 8**. I made mine from two sections of rail that I cut 1 1/16"

long and filed both ends of the rail heads to a 30-degree angle 1/16" long. Then I tinned the bottom of these rails.

Point and closure rails

I use one-piece point and closure rails that include the frog wing rails, so I made a matching pair of them from two sections of rail seven inches long. The dimensions are shown in **fig. 8**. I filed opposite sides at one end of each rail to make the tapered switch points, and I bent the other ends as mirror images into the frog wing rails.

I knew the frog area would require some bending and fitting, so I shaped the point ends first. It took some care, but I started 1 1/2" from the end to file the taper into the back of each point. Then I flipped each point over and filed off the inside railhead for about 1/8" so it would blend smoothly against the stock rail.

Tinning these point rails was a bit tricky, as I needed to tin only 1/8" at the very tip of the points. Then I left 1 3/8" of the point rail base untinned (so the rail will slide freely across the ties), before tinning the remainder.

At this point, all of the parts are ready for final assembly and soldering,

Install the straight stock rail

With the PC ties glued into the jig, I began by positioning the straight stock rail with its point notch 1/16" from the switch rod's center line on the side facing away from the frog. Then I wiped some flux on the PC ties and soldered the rail to the ties, working from one end to the other and keeping the rail straight as shown in **fig. 9**.

To make these solder joints I gripped the railhead with a small pliers, touched the tip of the hot soldering iron on the web of the rail above a PC tie, and pressed the tip firmly downward. In a



Fig. 9 Stock rail assembly. With the tinned ties glued to the jig, Lance positioned and soldered the straight stock rail to the PC board ties. The odd tie spacing shown here provides support under the different parts of the turnout.

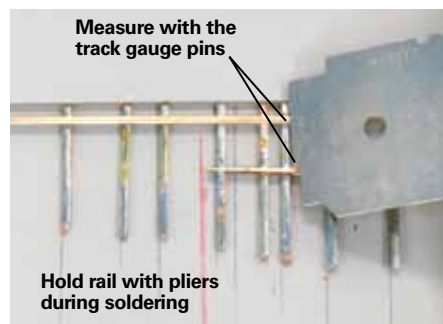


Fig. 10 Positioning the frog. Lance positioned one of the frog rails using the NMRA gauge to space it the proper distance from the straight stock rail. Then he held the rail in place with pliers while he heated the joint with the iron to secure the pieces.

few seconds, the solder liquefied so I could remove the heat while continuing to hold the rail as the joint cooled.

Position the frog

The next step was to position the first frog rail so its tip aligned with the mark on my jig. I used my National Model Railroad Association (NMRA) gauge to position the rail and soldered it in place, as shown in **fig. 10**. I marked the frog angle on the jig with the line extending outward from the point of the frog.

I positioned my second frog rail over the angled line and soldered it to the PC ties as shown in **fig. 11**. Once the rail was solid, I used stainless steel tweezers to pinch the frog points firmly together while I soldered them to each other and filled in the gap at the top with more solder. Then I filed the tip of the frog to a sharp point, including the removal of a little metal from the railheads, and filed the top of the frog flat.

The curved stock rail

I used my fingers to gently bend the curved stock rail to its approximate shape. Then, starting at the point end, I set the track gauge halfway between the NMRA gauge's minimum and maximum dimensions and applied heat to

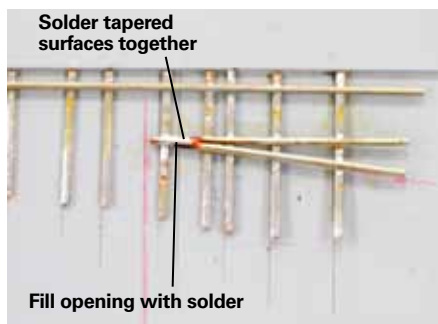


Fig. 11 Setting the angle. After drawing the 1:6 frog angle on the jig, Lance positioned the second frog rail over the line and soldered it to the ties. Then he reheated the point rails and added solder to fill in the gap between them. Any rough edges were filed off.

tack the stock rail in place. I've found that the curved stock rail often has to be adjusted slightly as the assembly proceeds, so I soldered it to only a few PC ties at this time.

Next, I set the gauge to the minimum at the frog and tacked the rail there and followed up with a third tacking point near the diverging end. After that, I returned to reheat and complete all the soldered joints.

Closure rails

The closure rails require the most care. I started with the straight rail and laid it loosely in place with the point aligned with the notch in the stock rail. Then I used a marking pen to place a dot on the rail even with the point of the frog. See **fig. 12** on the next page. I made a second mark $\frac{1}{4}$ " toward the switch point where I had to bend the closure rail to match the frog angle.

I made a third mark $\frac{1}{2}$ " in the opposite direction from the first mark to indicate the end of the wing rail and trimmed off the excess rail. Then I made a small outward bend at the end of the wing rail, as shown in **fig. 13**, so the wheel flanges wouldn't hit the rail end.

Since I wanted the closure rail to move at the point end, I soldered it only

Materials list

Clover House

www.cloverhouse.com
260 printed-circuit board ties,
.056" width
261 printed-circuit board ties,
.110" width

Micro Engineering

microengineering.com/
17-055 code 55 rail
(non-weathered)
37-106 wood turnout ties

Team Epic Inc.

www.teamepiconline.com
5004 Team Trinity liquid rosin flux

3M Corp.

Super 77 spray adhesive

Tools

40 watt pencil-style soldering iron
NMRA N scale gauge
Needle files (flat and triangular)
Optivisor (optional)
Rail nippers (optional)
Razor saw

Miscellaneous

.032" rosin core solder
Lacquer thinner

to the three PC ties nearest the point of the frog and around the wing rails. I didn't solder it to any other ties between the frog and the headblock, farthest from the frog. Then I repeated the process for the second closure rail. I set my rail spacing halfway between the minimum and maximum on the NMRA gauge, except around the frog, where I used the flangeway pins to set the rail spacing (as explained in the instructions that come with the NMRA gauge).

Time to cut some gaps

While the PC ties work well for N scale soldered trackwork, they also conduct electricity. At this point I had to cut gaps in the rail and ties to electrically isolate the rails.

Using eye protection and a cut-off disc in my motor tool, I carefully aligned and cut gaps through both closure rails about $\frac{1}{2}$ " away from the point of the frog toward the points. Then I repeated the process and cut a gap $\frac{5}{8}$ " from the point of the frog in the other direction. See **fig. 14**. I used my fingers to apply gentle downward pressure on the closure

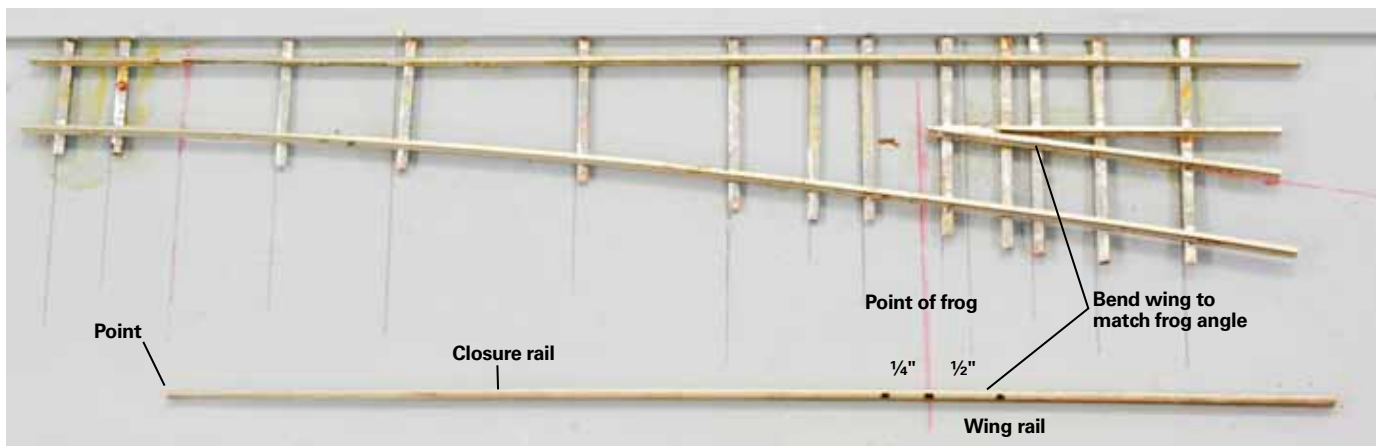


Fig. 12 Marking rails. Each closure rail was made in one piece with a switch point on one end and a frog wing rail at the other. The marks on the railhead indicate where the rail must be bent to match the angle at the point of the frog.

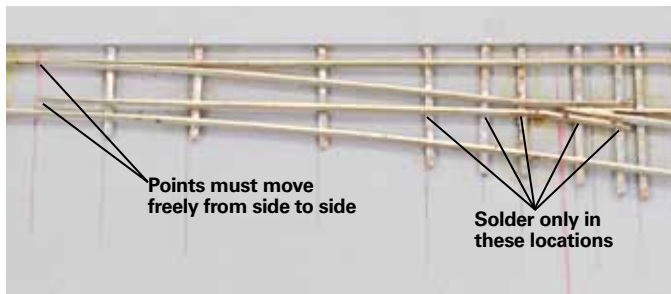


Fig. 13 Closure and wing rails. Lance anchored the frog wing rails first, being careful to avoid pinching the flange-way. Then he soldered the closure rails to the three PC ties closest to the frog. The long point ends aren't soldered to any of the ties so they're free to move from side to side.

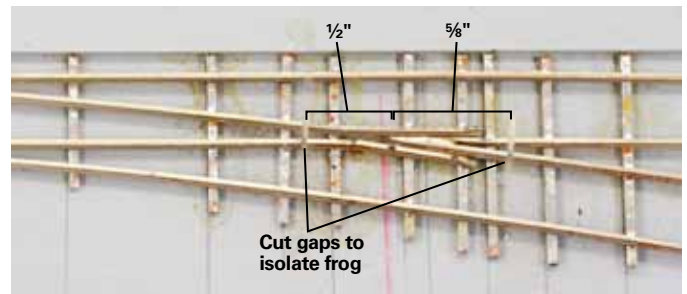


Fig. 14 Insulated gaps. After checking all of the soldered joints, Lance used a motor tool and cut-off wheel to cut gaps through the rails at both ends to isolate the frog. Then he made light cuts through the foil in the center of the PC ties to eliminate any shorting between the rails.

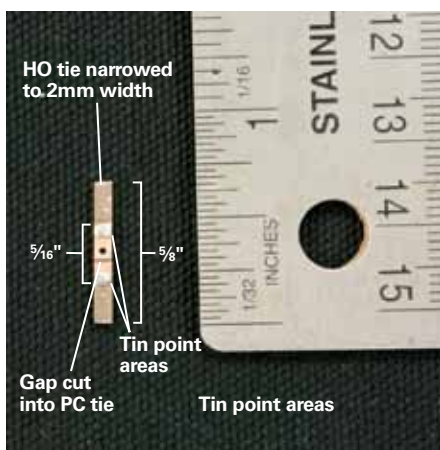


Fig. 15 Switch rod. Lance made his switch rod from an HO PC tie to give it more strength. Then he scraped off the excess foil to prevent shorts.

rails as I made the cuts, as these short rails have a tendency to pop loose. If they do come loose I just reheat the joints to resolder them.

I finished this gapping process by using the cut-off disc to cut a shallow gap through the copper foil on top of the PC ties at the locations shown in **fig. 14**. I was careful to avoid cutting all the way through the ties, but I did make

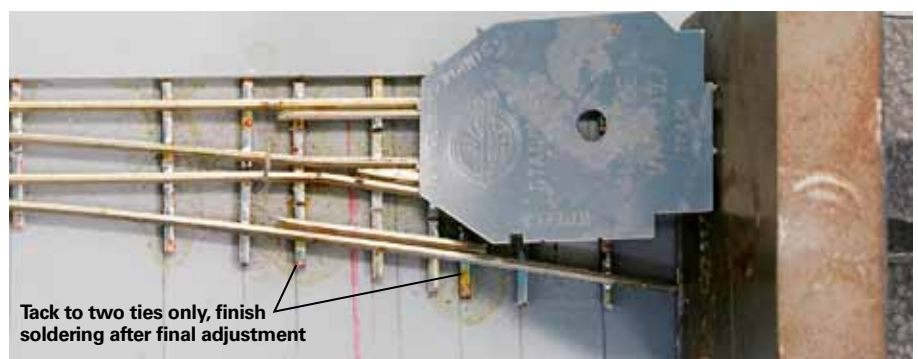


Fig. 16 Guard rails. Lance positioned the guard rails opposite the frog. Then he checked the spacing with the NMRA gauge before soldering them to two ties.

sure I cut all of the gaps (it's easy to miss the ones inside the closure rails near the frog and those separating the diverging tracks just beyond the frog). If I have a short in one of my new turnouts, the first thing I check is these gaps.

The switch rod

Scratchbuilding an HO turnout offers the opportunity to build a thin switch rod. However, I've found this is less practical in N scale, as the small surface area of the joints often results in broken points. This is especially true on turnouts with switch motors. **Figure 15**

shows how I made my switch rod from an HO scale PC tie narrowed to 2mm.

To make the switch rod, I cut off the 2mm HO tie to a length of $\frac{5}{8}$ " and scraped off the foil except for a $\frac{5}{16}$ " area in the middle. I drilled a no. 63 hole in the middle and cut a gap across the center of the foil. I tinned the ends of the foil where the points would rest and slipped the switch rod under the points.

I pushed one point tight against the stock rail and moved the switch rod over so the tinned area was beneath the point. It should not extend under the stock rail. Then I soldered the point in place and

repeated this step for the other side. To ensure a tight fit I use a pair of stainless steel tweezers to hold each point firmly against the stock rail while I solder the point to the switch rod.

Guardrails and clean-up

The guardrails were relatively easy to install. I placed one in position and used the “flangeways” pins on the end of my NMRA gauge to set the gap between the guardrail and the frog wing rails, as shown in **fig. 16**. I then soldered the guardrail to a couple of the PC ties and repeated this step to align and fasten the opposite guardrail.

Finally, I went back and finished soldering any remaining rail-to-tie joints. I removed the turnout from the jig by brushing on a little lacquer thinner as a solvent to loosen the 3M spray adhesive. I also removed any residue of the soldering flux using a toothbrush soaked in denatured alcohol. See **fig. 17**.

Wood tie application

I spread the wood ties out on the original jig, adjusted their spacing by eye, and then set the turnout over them. Next, I used a pencil to mark the wood tie lengths and cut them to size. After making sure the ties were still in order on the jig, I flipped the turnout over and lightly coated the bottoms of the rails with gel-type cyanoacrylate adhesive (CA). Then I set the wood ties in place, being careful to keep the CA away from the points. My last step was to add the two long headblocks, which can be positioned to put the switchstand on either side. **Figure 18** shows my completed turnout with its wood ties.

Potential trouble spots

While it's tempting to use a more realistic narrow gap between the points and stock rail, rolling stock with overly wide wheels tends to pick the narrow points and derail. I've found that using a $\frac{1}{16}$ " gap is very reliable in N scale.

If the gaps in the closure rails are too close to the frog point, the spacing between the closure rails will be close enough to allow locomotives with wide wheels to span both rails and short.

Improper guardrail or wing rail spacing is a common cause of derailments. This is easy to correct using the NMRA gauge and the soldering iron.

As soon as the closure rails are tacked in place, it's important to make sure the wheels flow smoothly from the points through the frog. It takes practice to get the bends for the frog wing rails correct.



Fig. 17 Final cleanup. A little lacquer thinner dissolved the glue holding the ties to the jig. Once the turnout was free, Lance cleaned off any visible flux with alcohol to prepare the PC ties for painting and weathering.

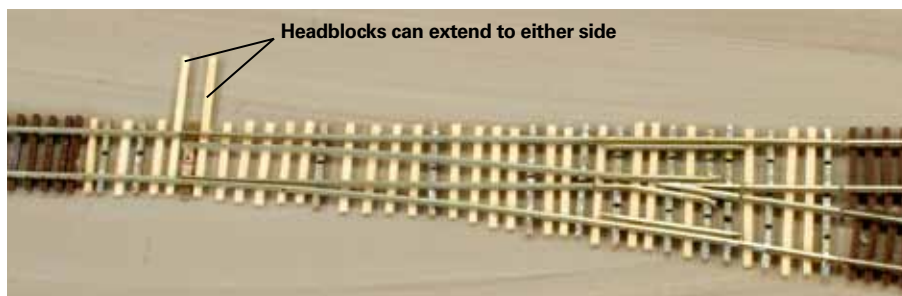
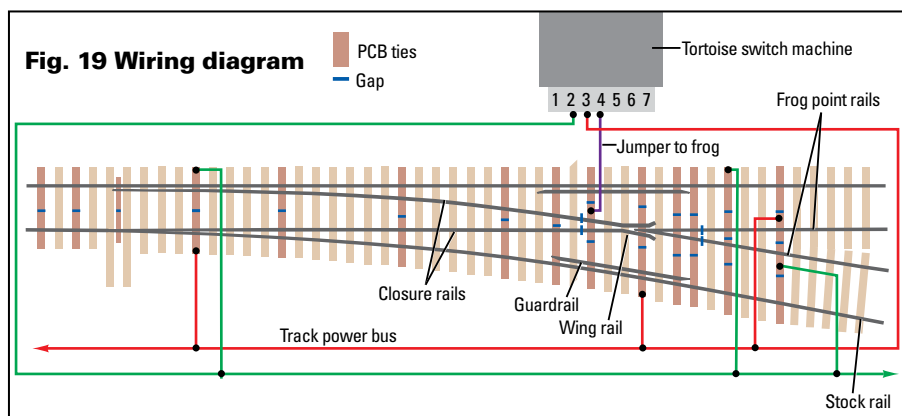


Fig. 18 Wood tie installation. Here's one of Lance's scratchbuilt N scale no. 6 turnouts ready for installation and finishing. After all the ties have been painted and weathered and the switch is ballasted, it'll be difficult to tell which ties are made of wood and which ones are cut from the printed circuit board.



If one's a little off, I reheat the solder and gently push the rail back into gauge.

Final installation

To install the finished turnout, I lay the flextrack approaching the point end with a thin bead of white glue. Being careful to avoid the switch rod area, I lightly smear a thin layer of white glue where the turnout will go. I then slip joiners on the approach end of the turnout and slide it into place, keeping the switch rod out of the glue.

I visually check the alignment before I lay the next section of flextrack at the frog end of the straight route. Then I add the diverging piece of flex track and recheck the alignment.

After the glue dries, I mask the switch rod area and paint and weather the turnout and any surrounding flextrack.

I then remove the masking and paint the switch rod area with a small paintbrush.

In N scale operating reliability is greatly enhanced by powering the frog to eliminate a large dead spot. I use Tortoise switch motors because they have internal contacts to switch the polarity automatically. The wiring diagram in **fig. 19** shows how I connect these contacts to the various parts of the turnout.

Once the switch motor is in place and the wiring tested, my new turnout is ready for years of reliable service. **MR**

Lance Mindheim is a frequent contributor to Model Railroader and our special issues. He lives in Silver Spring, Md., with his wife, Cathy, and son, Zachary. His Miami-based HO scale Downtown Spur switching layout appeared in Model Railroad Planning 2009.



Horst and Markus Meier created this rusty auto junkyard using inexpensive car models and toy cars.

How to model A RUSTY AUTO JUNKYARD

Paint, weathering powders, and more make a realistic trackside scene

By Horst and Markus Meier • Photos by the authors

Auto junkyards, where damaged or abandoned automobiles serve as a source of spare parts, can be found most anywhere.

Retired vehicles soon deteriorate and are quickly reclaimed by the outdoor elements. Before modern business practices were put into effect, the yards where these vehicles were parked were often overrun with grass, weeds, and bushes. Sometimes, this vegetation even grew on the automobiles themselves.

On model railroad layouts, junkyards are rarely found, even though they're common in the real world. Modelers tend to shy away from sully expensive, highly detailed model automobiles.

But I've found that I don't have to use high-quality models to make a junkyard scene. Instead, there are many lesser-detailed models on the market that can be used as substitutes. After my son Markus and I applied some of our favorite weathering techniques, the derelict cars look suitably detailed on their own.

Vehicle sources

Since the automobiles will be cut apart, painted, and weathered, I looked for cars from various sources. One option I use is Ueberraschungseier toy cars. It's a brand of chocolate candies in my home country of Germany with small prizes inside. There are a few series of these treats with American automobiles inside, which are very close to HO scale.

Another inexpensive option is the toy train automobile sets from Bachmann and Life-Like. With a bit of luck you can also find the Alloy Forms Scrapyard Set (no. 2046) available from online dealers. This set contains five metal auto bodies molded to show some accident damage and rust. Walthers also sells junk cars.

Even though the vehicles will be dismantled and heavily weathered, make sure they're older than the era of your layout.

Dismantling the models

Most junkyards are full of car and truck bodies, but there are also many different parts of vehicles. As seen in **fig. 1**, it's easy to separate individual parts such as fenders, hoods, and doors by simply using a motor tool and a fine-tooth saw. Complete front halves like the cabs of pickup trucks can be made in this way too. I used this technique on models that can't be taken apart easily.

If you plan to remove any car parts, I recommend doing so before you paint them, so that the cut edges match. Once the car parts have been painted, they can



Fig. 1 Dismantle vehicles. Markus removed the doors of this truck with a motor tool for use as scrap pieces around the junkyard.



Fig. 2 Powdered pastels. Markus weathered some car parts with powdered pastels. He varied the weathering by using different quantities of powders.



Fig. 3 Painting rust. Using paint Markus applied additional weathering to the cars. He used both dark and light colors to show different levels of rust.



Fig. 4 Car placement. If a junkyard doesn't have a crane and there's enough space to allow it, the cars will be parked next to each other instead of stacked. Random car parts and different levels of vegetation are common in junkyards.



Fig. 5 Finishing the scene. After Horst added vegetation around all the vehicles, he placed a figure looking for a spare part to complete the scene.

be glued back together using cyanoacrylate adhesive (CA), which gives the models a "cannibalized" appearance. Engines can also be put beneath the hoods and items can be placed in the trunks.

To add rough patches to the bodywork, lightly scratch the surface with an X-acto knife. Once the model is painted, these marks give the impression of rust blisters or damage under the paint.

I also added some dents and scrapes to the vehicles so they looked like they've been in accidents, and I flattened some of the tires so it appears that the cars have been parked there for a long time.

Painting and weathering

I started with the unpainted Alloy Forms models. I first removed all the molding seams and ridges from the vehicles and then applied primer to the cars. Once dried, I applied the base color.

I then repainted the individual parts. This created the impression that the parts have been replaced at one time. The best subjects to repaint are the doors and fenders. Headlights and radiator grills can be painted at this stage too.

After all the parts were painted, I started weathering the model. I first used powdered pastels. As seen on **fig. 2** on

the previous page, I simply dabbed on the different powders with a soft brush.

Since the powders consist of small grains of pigment, the effect varies depending on the amount of powder used. The powder will collect in places where you've created accident damage or rust holes, forming rust spots just like those on real cars. Afterward, I used the powders to create a thin film of rust. I had to make sure that it wasn't so heavy that it covered the basic color of the car.

As seen on in **fig. 3**, Markus and I also used undiluted acrylic paint on the vehicles. We found it's best to start with dark colors, which simulate old, deep-seated rust. We then used increasingly lighter shades for newer rust. When doing this, we made sure that the newer rust didn't appear everywhere on the vehicle.

By mixing fine sand with the basic rust color, I created a rough, rusty surface on the car models. Here in Germany, a company called Waco sells a rough-grained acrylic paste for structural effects like this under the trade name "Structure." Its mud-brown shade, no. 9700 587, is very suitable as a basic shade for rust. A.I.M. Products Dusty Brown weathering powder, no. 3113, would also work.

Creating the scene

Before positioning the cars and parts on the layout, I needed to create a realistic junk lot. This consisted of sand, small stones, and flattened grass. You can see how this looks in real life in **fig. 4**.

It's important to simply place the cars next to each other on a flat surface. In smaller scrap yards the cars aren't stacked up, since there's no crane available and there's adequate space.

Once I positioned all the vehicles next to each other, I placed the separate car parts in between or leaned them against the vehicles. Certain parts, such as axles or doors, can be piled up in larger numbers.

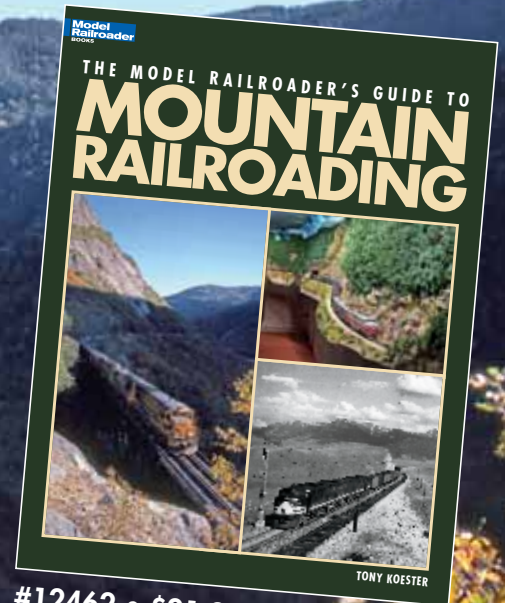
Since some of our cars have been standing here for a very long time, I added thick tufts of grass and bushes between the cars and the parts. As you can see in **fig. 5**, a few human figures in the scrap yard complete the scene. These could be children playing or mechanics removing parts.

If you're looking to fill an open spot on your layout, get some inexpensive model vehicles and create a rusty auto junkyard scene. **MR**

Horst Meier of Germany is a regular contributor to European modeling magazines and has written many articles for Model Railroader.

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The Beer Line in a basement

A fresh approach to a popular prototype industrial branch

By Rich Steenwyk

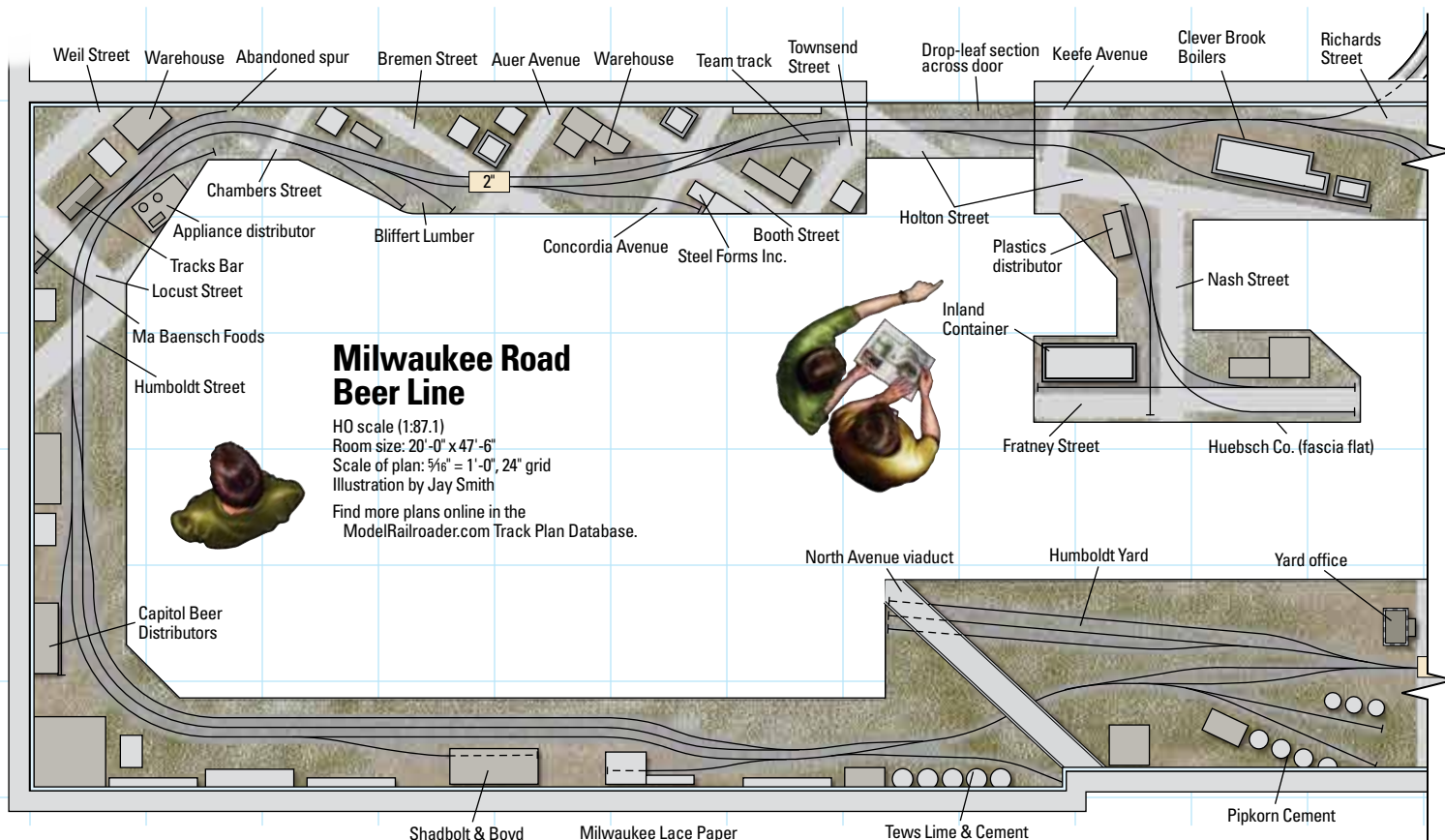
I designed this track plan for my brother Mark, who had more space in his basement for a model railroad than ideas of what to model. Though he had accumulated a considerable collection of modern rolling stock in anticipation of modeling mile-long coal and intermodal trains, he quickly realized how difficult it would be to do so convincingly in a 1,300-square-foot basement. I agreed to help Mark

come up with a track plan better suited for his space.

Terminal branch lines make good candidates for realistic model railroads, as their relatively short length makes them easier to selectively compress. For inspiration, I turned to a prototype only steps away from my downtown Milwaukee home: the southern end of the Milwaukee Road's Chestnut Street Branch, better known as the Beer Line.

A short history

The railroad that would become the Beer Line began as the original charter line of the LaCrosse & Milwaukee Railroad in 1854, originating from the intersection of today's Highland Boulevard and Old World Third Street in downtown Milwaukee. By 1869, railroad mergers and consolidation had relegated most of the L&M's original line to Portage, Wis., to secondary status. But the



at the Lincoln Warehouse just south of Chestnut Street (today's Juneau Avenue).

The final 1½ miles of the line south of Humboldt Yard lends itself well to modeling, as all of the major components of a complete operation are present in this short distance. There's a modest engine terminal, three pocket-sized yards, and plenty of car spots to keep two switchers busy three shifts a day.

With a time frame of the late 1970s and a minimum exercise of modeler's license, my brother could host a realistic operating session for five or so friends and put those MP15ACs to work switching the Schlitz complex and other nearby industries. The line was still healthy in this decade, but it survived only until the late 1980s, when the closure of the Schlitz Brewery sealed its fate.

[For more information about the Beer Line and a different track plan, see the January through May 2009 issues of *Model Railroader*. – Ed.]

Designing the plan

The Schlitz Brewery complex is the anchor of this track plan, but other industries are featured as well. Team tracks and warehouses occupy the very south end of the line. I also included signature geographical features in the plan, such as the track down the bluff to river level that was nicknamed "the Roller Coaster."

Designed to fit in the finished portion of Mark's basement, the layout runs along the walls of the room. The full plan measures 20 x 50 feet, which sounds large, but since the depth ranges between 18 and 42 inches, the footprint of the layout isn't that large. The elevations shown on the plan are relative to the base elevation of 46 inches, but any comfortable base height could be substituted. As with the prototype, most of the modeled portion runs downgrade from the top of the bluff at Humboldt Street to river level at the end of the line. The spur tracks at the brewery are all level and the storage tracks north of there are designed to have a crest in the middle to facilitate parking cuts of cars.

The corner where the Schlitz Brewery is located is a deep scene, and the spur tracks there will be hard to reach for some. A small step stool could solve that disadvantage. Operators can also offset the couplers for delayed uncoupling.

Operation

The prototype saw around-the-clock operation, with two switch crews on the day shift, three on the afternoon shift, plus one more at night – all based out of

Beer Line operating scheme

Here's a possible 24-hour operating scenario for the Humboldt switch engines, covering the southern end of the layout.

The 7 a.m. job switches Schlitz:

- Pulls loaded cars from the C-House and spots empties from the Box Yard in return
- Switches any inbounds of bottle returns or new bottles from previous day
- Switches the Schlitz Elevator, spotting inbound loads and empties for spent grain (the elevator might require three switches to handle all of the cars)

The 8 a.m. job functions as a general switcher:

- Blocks the inbound cars in Humboldt Yard for other local industries
- Works Pabst in Cherry Street Yard and at the Pabst elevator
- Stores outbound cars on the line for later pick up by a transfer run

The 1 p.m. job again switches Schlitz:

- Pulls loads from the C-House and spots empties from the Box Yard
- Switches any inbounds of bottle returns or new bottles from today
- Switches industries at the far south end of the branch

The 2 p.m. job switches other area industries:

- Works Trostel Tannery and the Commerce Street team tracks
- Picks up any Pabst beer loads ready at Cherry Street Yard

A 3 p.m. transfer job runs north:

- Moves any outbound cars to Rock Junction
- Returns at end of shift with Schlitz terminal grain loads

The Afternoon Beer Train would arrive in early evening:

- Enters line from North Milwaukee at 3:30 p.m.
- Turns at Schlitz, taking beer loads and hide empties from the Box Yard
- Takes empty cars ready to return (not needed later for loading)

The 11 p.m. job primarily switches Pabst:

- Works out of Cherry Street Yard and switches Pabst elevator
- Assembles outbound cars for the midnight Beer Train transfer

The Midnight Beer Train would arrive in early morning:

- Enters line from North Milwaukee at 11:59 p.m.
- Turns at Schlitz, taking beer loads and hide empties from the Box Yard
- Takes empties ready to return

Humboldt Yard. Two "Beer Train" transfer jobs also worked the line, the first of them coming through in the early afternoon and the second in the early morning. [See "Beer Line operating scheme" above. – Ed.] Other local jobs originated at Gibson Yard to the north.

If space is at a premium, it's possible to model only the part of this plan from Humboldt Yard south. If you do so, the Gibson jobs wouldn't have to be modeled. Humboldt Yard itself wouldn't need to be as large, either. Tracks north of the yard would be represented by staging.

The Beer Train transfer jobs originate from staging and enter the layout across Richards Street at the north end. Cars are set out and picked up either in Humboldt Yard or in the long sidings to the west of the running track. Since the entire line was operated as yard territory, crews can store cars where they see fit.

Adjustments would need to be made to the work schedule to accommodate

appropriate crew sizes and balance out the work. Most industries on the line were switched several times per day, but it would be up to the layout builder to decide how complex to make the waybill system for exchanging cars.

To keep operations in such a concentrated area fluid, Digital Command Control (DCC) is a necessity.

I hope this track plan inspires others that a realistic model of a prototype can be built without a long main line. Thus far, it has been a rewarding experience for my brother and me. **MR**

Rich Steenwyk has been a model railroader since his early teens, starting with doodling track plans under the guidance of his uncle, later designing and building several basement-sized layouts with his father. He lives in Milwaukee, a stone's throw from the site of the "Roller Coaster" on the former Milwaukee Road Beer Line featured in this track plan.

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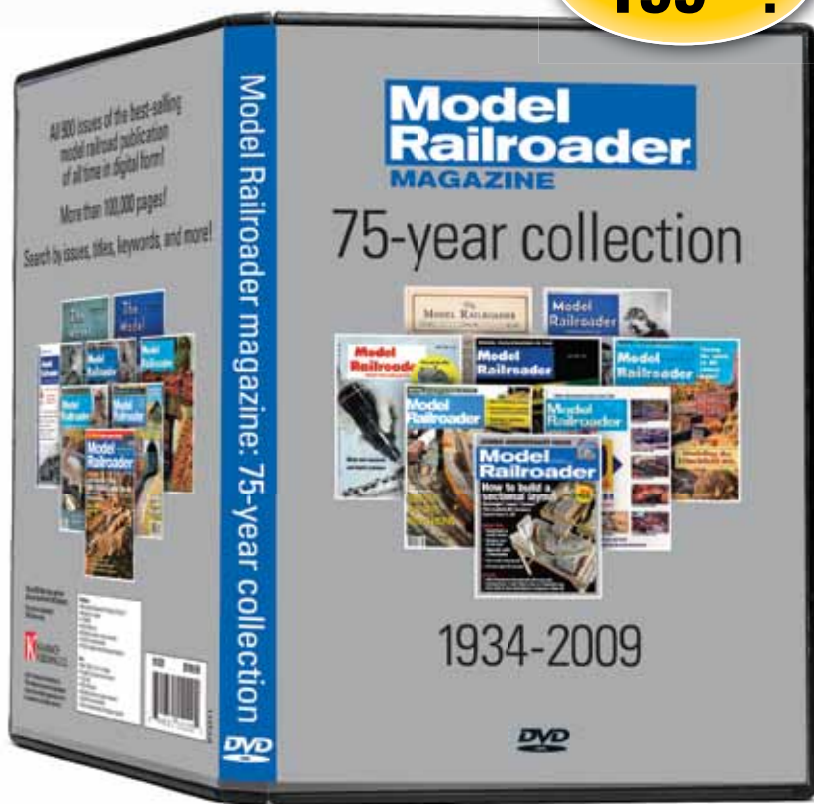
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Controlling train-order signals



Mike Polsgrove uses Digital Command Control to operate the train-order signals on his HO scale Soo Line layout. Photos by the author

Since my HO Soo Line layout is set in 1963 and operations are controlled by timetable and train orders, I needed signals at each train-order station. On the prototype, these signals were controlled by the operator in the depot or tower. On model railroads, many layout owners have signals controlled from a central location by an operator or dispatcher. I planned to have the signals controlled by the dispatcher. However, I wasn't thrilled about running wires from each depot to the dispatcher's desk, so I wired the signals with Digital Command Control (DCC).

I selected a Digitrax TF4 function-only decoder for the signals. The mobile

decoder lacks motor control, but it can be used to operate up to four lights. With three lights in each direction to illuminate, I used three functions of the decoder. There are eastbound and westbound signals on the same mast, so two decoders are required.

I couldn't find any commercial signals similar to the Soo's. At the recommendation of a friend, I contacted Randy Piccuilla at Custom Signal Systems (www.customsignalsystems.com), and he manufactured prototype signals. He used light-emitting diodes (LEDs) for the aspects.

The LEDs are wired with magnet wire. This fine-gauge wire is coated with varnish insulation and is small enough to fit through the signal mast to the underside of the benchwork.

I try to build sub-panels whenever I can. This allows me to complete most of the wiring at my workbench and simply connect the panels to the layout wiring.

For the train-order signals, I used a scrap piece of pressboard (a type of hardboard). I attached a 12-position barrier strip to the board to make the connections between the circuitry on the sub-panel and the wires under the layout. I used double-sided foam tape to mount the decoders, as shown in **fig. 1**.

The LEDs require current-limiting resistors. I used on 1kΩ resistors and a piece of perforated project board to mount them.

Both decoders are wired identically. The red, black, and blue wires are con-

nected directly to terminals on the barrier strip. The other wires are connected to one side of each resistor. The default function mapping of the TF4 is that the white wire is controlled by function (F) 1 on a DCC throttle, the yellow wire by F2, the green wire by F3, and the purple wire by F4. In this case, the purple wire is unused and not connected.

After I wired the panel, I programmed its decoders using my DCC system. The westbound signal is programmed to the station's milepost with the number 1 appended. The eastbound signal has the number 2 appended.

Next, I mounted the panel under the layout and connected it to the signals and track power. I connected the red and black wires to the track power. Each blue wire from the decoder is attached to the common anode wire of the signal it controls. I connected the white wire's resistor to the signal wire connected to the green LED. This allows F1 to control the green LED. Then I connected the yellow wire's resistor to the yellow diode. The resistor connected to the green wire is attached to the red diode.

At this point, a DCC throttle can control the signals. However, I prefer to have a control panel with toggle switches. I'd previously used the NCE Mini Panel to control the turnouts in one of my staging yards. I planned on using a Mini Panel to control a staging yard that's next to my dispatcher's desk. The panel has plenty of inputs for both, so I wired my train-order signal control panel to the inputs of the NCE Mini Panel.

The Mini Panel has 31 inputs and is designed for creating control panels and other control functions. When an input is grounded, a series of DCC commands are sent through the NCE cab bus to the command station and then out the power booster to the track. Since I used mobile decoders, I needed to send locomotive commands.

The Mini Panel is capable of sending locomotive and stationary decoder commands. It uses the NCE cab bus to send commands to the command station, so it can only be used with an NCE system.

There are other hardware control panel solutions available. In addition to

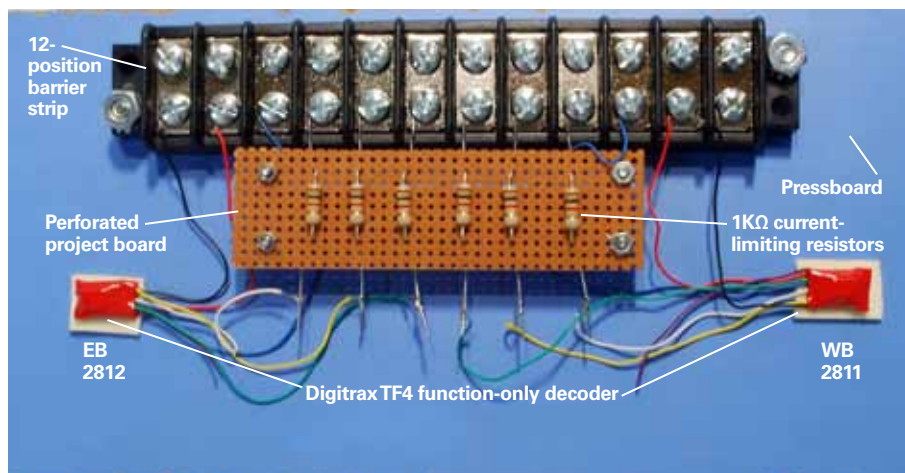


Fig. 1 Sub-panels. Mike did most of the wiring for his signals at the workbench. By building this sub-panel, he limited the amount of under-the-layout wiring.

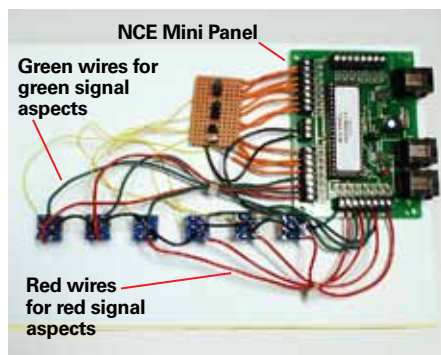


Fig. 2 Color coding. Mike used red and green wires to coordinate with the color of the signal aspects. This makes troubleshooting easier.

hardwired control panel solutions, there are a number of computer programs like the free Panel-Pro from JMRI that could be used (jmri.sourceforge.net/help/en/html/apps/PanelPro/PanelPro.shtml). You need an interface between a computer and your DCC system to use these.

To build my panel, I used a double-pole double-throw (DPDT) center-off switch to control each signal head (one for the eastbound signal and one for the westbound signal). I used one pole of the DPDT switch for the green and red indicators. I wired the center terminal to ground and each of the other terminals to separate inputs. I used red wire for the red signal input and green wire for the green signal input. Color-coding makes troubleshooting easier, as seen in **fig. 2**.

When the switch is thrown in one direction, the red input is grounded. When the switch is thrown in the other direction, the green input is grounded. The yellow input is a little more complicated. I wanted one switch to control all three signal aspects, so the center off position must ground the yellow input. Being an off position, there is no connection made when the toggle switch is in the center. The team at NCE recommended a nifty little circuit consisting of an unused input and a single NPN transistor, as shown in **fig. 3**. I used the RadioShack's no. 276-2058 transistor.

The NPN transistors have three terminals: a base, an emitter, and a collector. A diagram on the box identifies the terminals. The other pole of the toggle has the center terminal connected to the base of the transistor. The other two terminals are connected to the ground on the switch. The base of the transistor is also connected to an unused input of the Mini Panel.

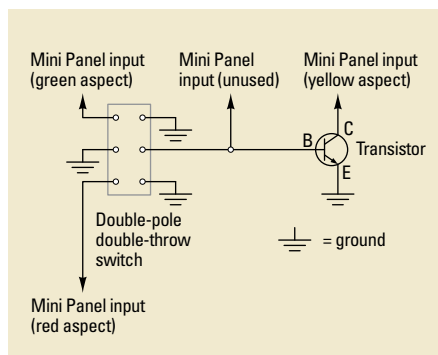


Fig. 3 A handy circuit. In this circuit, the transistor grounds the yellow input when the switch is in the center-off position.

The collector is attached to another input, and the emitter is connected to the ground of the Mini Panel. Each yellow signal light uses two inputs, one of which is programmed.

With the Mini Panel wired, I programmed each input individually with NCE's ProCab. When an input is grounded, the Mini Panel executes a sequence of four commands. Inputs can be linked together to increase the number of commands.

Input no. 1 is the yellow aspect of the westbound Marshfield signal, so the program consisted of two steps. The first command is to select the mobile (locomotive) decoder, in this case 2811. The second command was to turn on function F2. The function command controls four functions at a time, so I made sure the green (F1) and the red (F3) functions were off.

Input no. 13 is the green aspect of the westbound Marshfield signal. The first command in the sequence is to again select locomotive decoder 2811. The second command is to turn on function F1. I programmed all other inputs the same way.

At this point, all I had to do was mount the control panel and connect it permanently to the NCE cab bus. Other than connecting the decoder sub-panel to the signal and connecting the Mini Panel the cab bus, there was no under-the-layout wiring. Additional signals can be added at any time just by tying them in to the track bus.

Functioning train-control signals add another element of realism to operating sessions. If you use a mobile decoder, such as the Digitrax TF4, make sure your control panel is capable of issuing locomotive commands. **MR**

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Upgraded Bowser C-630 in HO features DCC sound with a realistic Alco rumble

All-wheel electrical pickup, newly tooled Alco Hi-Ad or Tri-Mount trucks, and many separate brass, wire, and photo-etched detail parts are some of the highlights of this HO scale Alco Century 630 from Bowser. The model is an upgraded version of the Stewart Alco C-630 reviewed in the March 2003 issue of *Model Railroader*. My favorite new feature of the Bowser C-630 is that it's available with a SoundTraxx Digital Command Control sound decoder.

Prototype. Between 1965 and 1969 Alco built 133 C-630s for railroads in the United States and Canada. The C-630

had a 3,000-hp 16-cylinder Alco 251E diesel engine. Production of the C-630 overlapped with the production of the 2,800-hp C-628 and the 3,600-hp C-636. The C-630 looked a lot like a C-628. The main spotting feature of the C-630 is the aftercooler that projects upward behind the air intake on top of the hood.

The Chesapeake & Ohio Ry. received its four C-630s in 1967 and numbered them 2100 to 2103. The Chessie sold three of the locomotives to a western Australian railroad in 1974.

The model. We reviewed a model of a C&O prototype equipped with Alco

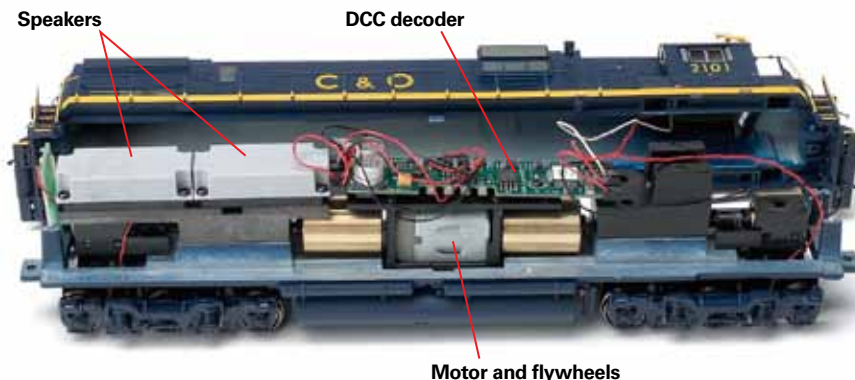
Hi-Ad trucks. These trucks have a longer wheelbase than Alco Tri-Mount trucks. They also increase the locomotive height by 5". The Hi-Ad trucks on the model have the correct 13'-7" wheelbase, and the model's height matches its prototype at 15'-3" from the rail to the cab roof. (The Tri-Mount trucks make the rail to roof height 14'-10".)

The other dimensions of the model match drawings of an early production C-630 printed in the 1966 *Car and Locomotive Cyclopedia of American Practice* (Simmons-Boardman).

All the molded detail on the body shell matches prototype photos. The windshield wipers and walkway over the radiator grill are photo-etched. Cast brass parts include the horn, bell, and m.u. hoses. The grab irons and lift rings are formed wire. The locations of the parts match prototype photos.

Paint coverage on the model is smooth and even. The yellow lettering is opaque. Even the tiny warning stencils are legible under magnification.

After unscrewing the coupler boxes, I carefully lifted the body shell off the die-cast metal frame. The motor and flywheels are mounted in the center of the frame. The SoundTraxx DCC decoder is attached to the frame above the motor.



The motor and flywheels are mounted in a die-cast metal frame. The SoundTraxx DCC sound decoder is connected to two enclosed speakers.

► Highlighted in this issue

- 72 Aztec milled frame for Kato N scale E8
- 72 Digitrax DCC sound decoder for Kato E8
- 74 BLMA HO scale TrinCool reefer
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- 76 Athearn HO scale PC&F boxcar
- 76 Blair Line HO wood cabin kit

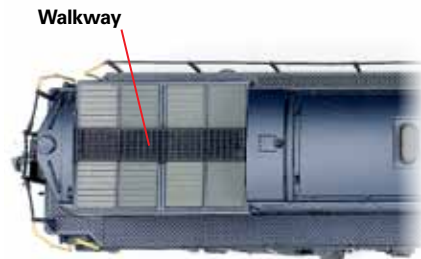
Two oval speakers in plastic enclosures are mounted facedown.

Performance. I tested the model in our workshop with an MRC Tech 4 DC power pack and an NCE Powercab DCC system. The Alco accelerated smoothly during both DC and DCC speed tests. During the DC speed test, the diesel reached 80 scale mph, and during the DCC test it reached 70 scale mph. Both speeds were possible with prototype C-630 gear ratios.

The starting speed on both the DC and DCC test track was 3 scale mph. After I set the model's decoder to 128 speed steps, it crept along smoothly at 1 scale mph in speed step 1 when I ran it with our DCC system.

I also ran the Bowser model on the *Model Railroader* club layout, the Milwaukee Racine & Troy, using a CVP EasyDCC system. According to our drawbar pull tests, the diesel can pull 48 HO scale freight cars on straight and level track. During climbing tests on the MR&T, the Alco easily hauled 20 coal gondolas up a 1.5 percent grade and pulled 16 gondolas up a 3 percent grade without slipping.

Sound effects. The climbing tests also showcased the realism of the SoundTraxx DCC sound decoder. The intensity of the engine rpms increased as the Alco fought its way up grade. The sounds matched those of a prototype



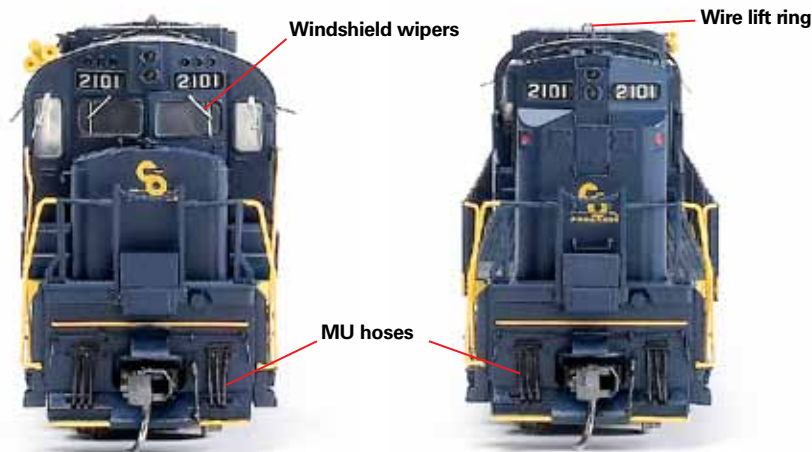
As on the prototype, there's a see-through walkway over the radiator grill on top of the rear end of the hood.

C-630 that I watched on a YouTube video. In DCC I could also trigger a long horn blast, short horn blast, and the bell.

The decoder features many programmable configuration variables (CVs) that let you fine-tune locomotive performance and sound effects with a DCC system. You can adjust the decoder's seven-band equalizer, choose between six different air horns, and adjust the locomotive's speed table. A user's manual is available at www.soundtraxx.com.

The delay between the engine rpms and the movement of the locomotive is adjustable using CV116. You can also set CV116 to 0 and use function keys 9 and 10 to manually notch the engine rpms independently of the locomotive speed.

The decoder is dual mode, but the sound effects are limited on a DC layout. The model's sounds and lights activate at 6.5 volts. As I advanced the track voltage the diesel rpms increased and the model started moving. When I flipped the direction button a grade-crossing signal sounded. I found this feature annoying, and it can be turned off. However this programming requires a DCC system.



The model has many separately applied detail parts, including the windshield wipers and wire lift rings. The m.u. hoses are separate brass castings.

Dana Kawala

► HO scale Alco C-630

Price: \$169.95 (direct current), \$269.95 (Digital Command Control sound)

Manufacturer

Bowser
P.O. Box 322
Montoursville, PA 17754
www.bowser-trains.com

Road names (two road numbers each): Chesapeake & Ohio, Conrail, Pennsylvania RR, Reading Co., Union Pacific. C&O and RDG have Hi-Ad trucks. PRR and UP have Tri-Mount trucks. Conrail is available with either type of truck.

Era: 1965 to early 1980s

Features

- All-wheel drive and electrical pickup
- Chemically blackened metal RP-25 contour wheels in gauge
- Five-pole skew-wound motor with dual brass flywheels
- Kadee knuckle couplers at correct height
- Light-emitting diode headlights
- Minimum radius: 22"
- SoundTraxx DCC sound decoder (DCC sound version only)
- Weight: 1 pound 3 ounces

HO scale Alco C-630 diesel

| Drawbar pull | | 3.5 ounces | |
|--------------------------------------|-----------|--------------------|-----------|
| | | 48 HO freight cars | |
| Scale speed (DC) | | Scale speed (DCC) | |
| Volts | Scale mph | Speed step | Scale mph |
| 7 (start) | 3 | 1 | 4 |
| 9 | 33 | 7 | 26 |
| 10 | 45 | 21 | 60 |
| 12 | 80 | 28 | 70 |
| Current draw at 12 volts (DC) | | Slipping | .24A |
| | | Stalled | .34A |

Especially with a DCC system, the Alco C-630 from Bowser is a fun locomotive to run. The newly tooled Hi-Ad trucks and roadname-specific details make this HO diesel a standout model. – Dana Kawala, senior editor

Now on ModelRailroader.com

Subscribers can watch a video of this DCC sound equipped Alco pulling a train on our HO scale club layout.



An authentic sound solution for Kato N scale E8 locomotives

The recently released batch of Kato Electro-Motive Division E8 passenger diesels in N scale are good-looking, smooth running models. [For a review, see the July 2011 *Model Railroader*. – Ed.] If you're interested in adding Digital Command Control (DCC) and sound to your Kato E8, Aztec and Digitrax have made the installation job easier for you. Aztec offers a frame milling service, and Digitrax offers the SDN144K0A sound decoder, complete with speaker.

To begin the installation, you need to disassemble the locomotive and then send its die-cast metal frame to Aztec for milling. The firm lists complete instructions for the process on its website at www.aztectrains.com. The shipping and milling process is pretty quick (about 7

days). Atzec does a fantastic job, and the milling work is very clean, fitting the decoder, speaker, and capacitor perfectly.

Once the frame returned, I reassembled the locomotive's drivetrain. Be especially careful to note the orientation of the engine's trucks, since they work only one way – the arrows molded into the truck bottoms should point away from the fuel tank. Also, the power collection spring strips can be tricky to install properly. If they don't seat correctly in the plastic frame that sits atop the motor, they will not contact the tabs on the trucks, and the locomotive will run poorly (or not at all). The only part from the original model you do not need is the light board, which can be discarded.

The Digitrax decoder includes a detailed instruction sheet, showing the installation steps for a Kato E8. If you do the installation properly, everything is held in place with the original Kato light board clip. Not feeling very confident about that arrangement, once I was sure the decoder was installed and operating correctly, I soldered the motor terminals and the power collection springs to the appropriate pads on the decoder.

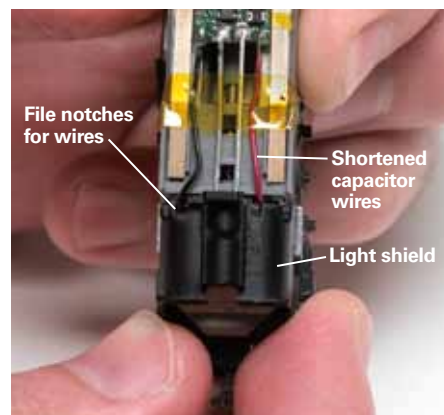
After I'd installed the decoder, I made a short test run with the mechanism on DCC, and it worked as it should. When I replaced the shell, however, it was apparent that the wires from the capacitor were preventing the shell from seating properly, causing the power contact

springs to break contact with the forward truck pins.

To correct the problem, I unsoldered both the capacitor and speaker from the decoder, shortened their wires considerably, and then soldered them back in place. I also filed notches for the capacitor's wires into the end of the cab light shield, as shown in the photo at left. After making those two fixes, the shell clicked into place as it should.

If you're looking for authentic E8 sounds, the Digitrax decoder has them. According to the firm's website, the sound file for this decoder was created using recordings made of Southern E8 no. 6900. This locomotive has dual EMD 567 prime movers, and Digitrax recorded them in the full range of operation for the decoder. Having stood trackside years ago as Milwaukee Road E8s roared by, the decoder doesn't provide the 1:1 proportion rumble I'd felt from the real engines, yet the sound quality is good considering that it's coming from a single 13mm speaker buried inside a model.

The decoder features several other sounds linked to function buttons, including a bell, horn, coupler crash,



For the shell fit properly, file small notches into the light shield so the capacitor's wires can pass through it.

Now on ModelRailroader.com

Watch a video to see and hear the Digitrax-equipped Kato E8 in action at www.ModelRailroader.com.

▶▶ TM3110S milled Kato E8 frame

Price: \$20.00

Manufacturer

Aztec Manufacturing Co.
2701 Conestoga Drive no. 113
Carson City, NV 89706
aztectrains.com

▶▶ SDN144KOA sound decoder

Price: \$69.95

Manufacturer

Digitrax
2443 Transmitter Road
Panama City, FL 32404
digitrax.com

Kato N scale E8 with Digitrax sound decoder

| Drawbar pull | | Scale speed (DCC) | |
|-------------------------------|------|-------------------|-----------|
| 1.1 ounce | | Speed step | Scale mph |
| 11 N scale passenger cars | | 3 (start) | 7.8 |
| | | 7 | 45 |
| | | 14 | 115.5 |
| | | 28 | 132 |
| Current draw at 12 volts (DC) | | | |
| Slipping | .18A | | |
| Stalled | .4A | | |

compressor noises, and brake squeal. All the sound volumes are adjustable.

I tested the Digitrax-powered E8 on both DCC and DC. The locomotive performed smoothly on DCC operation. (See the chart above.) Although the decoder can be used with direct-current layouts, it performed poorly in my test with an MRC Tech 4 power pack, so I wouldn't recommend it. The model didn't start moving until 9 volts, where it then zoomed along at 137 scale mph.

With the frame milled and the decoder installed, the model weighs 4.64 ounces and provides a drawbar pull of 1.1 ounce, indicating that the E8 will pull 11 passenger cars on straight level track.

Aztec and Digitrax have made installing sound in the Kato model simpler, but having to completely disassemble the locomotive to do it is not what I'd call a drop-in installation. The process took about two hours, plus some tweaking. However, with the project behind me, it's great to know that my E8 now has authentic twin EMD 567s rumbling under the shell, making it all the more fun to run! – David Popp, managing editor

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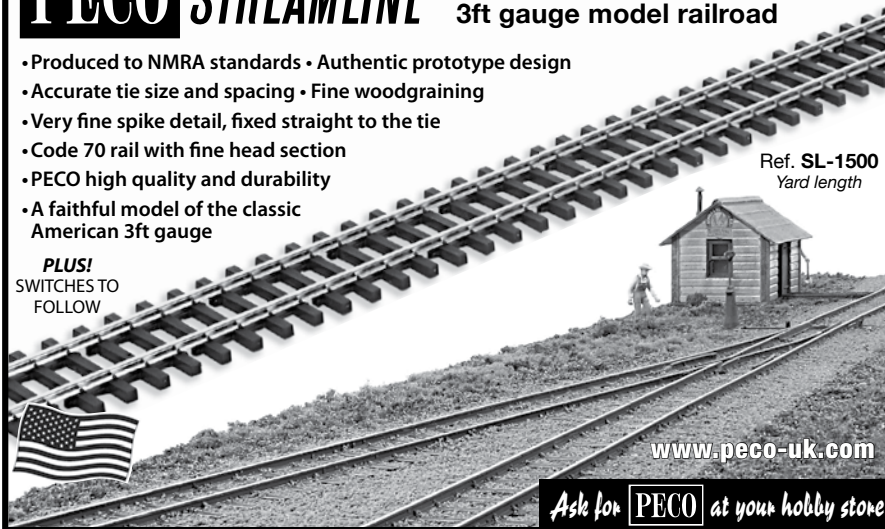
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Accurate proportions and fine detail highlight this HO reefer from BLMA

A correctly proportioned model of a modern mechanical refrigerator car is now available from BLMA Models. The injection-molded plastic car features separately applied wire, plastic, and etched-metal details.

The prototype cars began rolling out of the TrinityRail factory in late 2003. These excess-height cars, designated Plate F, can haul the equivalent of four 53-foot trailers. The cars are designed to make loading and unloading more efficient, and to better protect produce and other perishable goods during transit.

Railtex Corp. ships produce and other temperature-sensitive items in the reefers from its warehouses in Delano, Calif., and Wallula, Wash., to its distribution center in Rotterdam, N.Y. The unit trains are handled by Union Pacific and CSX.

Each reefer has a global-positioning system for tracking. The car's tempera-

ture can be monitored and set via satellite by UP employees in Omaha, Neb.

More information about the Railtex Corp. unit trains can be found in Roy Blanchard's article "A fresh approach" in the February 2010 *Trains* magazine.

BLMA's model is based on a Phase III car (111000 series), which uses grab irons on the B end sides. (Phase I cars (110000 series) have ladders on the B end sides.) The HO model's dimensions match those on prototype drawings from the TrinityRail website.

The injection-molded plastic model has a one-piece body with a separate roof and underframe. There were a few small gaps where the roof meets the car side.

The underbody has a molded center sill, stringers, and crossbearers. The air reservoir, control valve, and brake cylinder (and related piping) are separately applied. Use caution if you want to separate the underframe from the body, as the pipe from the control valve to the retaining valve is secured with glue.

The plug doors have separate closure rods, operating levers, and door tracks. The other door detail is crisply molded.

The car weighs 5.9 ounces, which is .4 ounce too heavy based on National Model Railroad Association recommended practice 20.1. The body-mounted Kadее no. 156 knuckle couplers are at the correct height. The coupler box covers are held on with Phillips screws. Care should be used when removing the cou-

▶▶ HO 64-foot reefer

Price: \$29.95

Manufacturer

BLMA Models

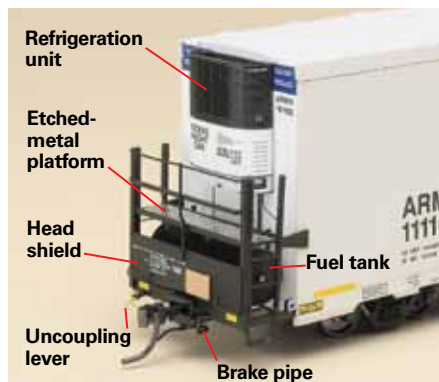
302 District Ct.

Fullerton, CA 92832

blmamodels.com

Road names: Union Pacific with ARMN reporting marks (Phase III prototype, 24 road numbers).

Era: 2003 to present



The car's A end features a variety of separately applied details.

plers, as the brake pipe brackets and uncoupling lever are attached to the covers.

The 36" metal wheels (mounted on plastic axles) are correctly gauged. The screw-mounted 100-ton trucks are painted black and have the car's road number and reporting mark printed on the truck face; the bearing caps are blue.

The white paint is smooth and evenly applied on the carbody, but there were a few light spots on the door tracks.

Except for two warning labels on the door, all of the lettering is legible under magnification. The placement of the lettering and reflective stripes matches prototype photos of car no. 111102.

With 1,500 cars in service, the Phase III TRINCool reefer is a common prototype. The well-proportioned and detailed model will look good in a manifest freight or a unit train. — *Cody Grivno*, associate editor

Cab06 for NCE DCC systems is easy to use

The Cab06 engineer throttle provides an economical way to add more operators to a layout controlled by an NCE Corp. Digital Command Control (DCC) system. The Cab06 has a light-emitting diode (LED) display and supports DCC functions 0 to 28.

Engineer throttles have only the controls needed to operate decoders. They don't have programming capability, which allows them to be more compact and less expensive than a master throttle.

The Cab06 works with most NCE systems, including Powercabs, SB3, and SB3a systems. Those who use a PH Pro, PH10, or PowerHouse will need to check that the system software is a version after March 1, 2007. If the software is older, then you'll need to contact NCE for a chip upgrade before using the Cab06.

Running trains. I tested the tethered version of the Cab06 with an NCE Powercab DCC system. The Cab06 measures 7/8" x 2 1/8" x 4 5/8" and includes a 6-foot long cord. The speed control knob and buttons are easy to reach with one hand.

I found the speed control knob to be very responsive at its factory setting. However, you can fine tune its sensitivity by adjusting the throttle's ballistic tracking. You can set the Cab06 to yard mode, where the knob also controls direction.

The numeric keypad and shift key allow access to functions 0 to 28. Pressing the shift key one, two, or three times also changes the commands controlled by other keys. For example, pressing shift three times followed by the HORN key toggles between 28 and 128 speed steps. Other commands include an emergency stop and viewing the recall stack (up to six locomotive addresses).

The shift key is also used to address accessory decoders and macros. The latter triggers several accessory decoders simultaneously, such as for a multiple turnout route. A guide to the commands is printed on the back of the throttle.

A separate HORN button triggers that effect as long as the button is pressed.



▶▶ NCE Cab06

Price: \$99.95 (cab06 tethered), \$189.95 (cab06R wireless)

Manufacturer
NCE Corp.
82 E. Main St.
Webster, NY 14580
ncedcc.com

This key makes it easy to sound whistle or horn signals. Pressing 2 will also activate the horn, but the effect will remain on until you press 2 again.

The LED display is 1/4" x 1 1/8" and most of the time displays the decoder address. A point lights up above an F or R (indicating forward or reverse direction) printed under the screen. Another light shows how many times the shift key has been pressed. I noticed that when I entered functions above 9, its number appeared briefly on the screen. The screen doesn't display speed step information, which I would have found useful.

The best part about the Cab06 is that it won't take long for you or your operators to learn how to use it. The Cab06 is a great way to expand operations on an NCE DCC-equipped layout. — D.K.

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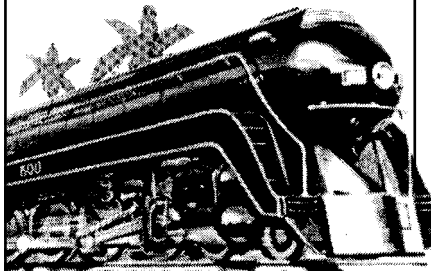
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PRODUCT REVIEWS

QUICKLOOK

HO scale PC&F 50-foot boxcar with Landis doors

Price: \$37.98

Manufacturer

Athearn Trains
2883 E. Spring St., Suite 100
Long Beach, CA 90806
athearn.com

Road names: St. Louis Southwestern (Cotton Belt) and Southern Pacific (four road numbers each with COTS, four without). Also available as an undecorated kit.

Era: 1970 to 1990s

Comments: Athearn has previously offered a highly detailed HO scale model of a Pacific Car & Foundry 50-foot insulated boxcar as part of its top-end Genesis line. We reviewed that model in our May 2011 issue. Now, Athearn offers the car with dual Landis doors, a configuration owned by the Southern Pacific and its subsidiary, the St. Louis Southwestern (or Cotton Belt).



Pacific Car & Foundry built the cars, with their distinctive pairing of eight-foot and six-foot Landis doors, for SP in 1970 and early 1971. The car is an Association of American Railroads type RBL, an insulated boxcar with load restraints. This type of car was used for carrying canned food and other temperature-sensitive goods.

Our sample is decorated for the SP, with large, yellow "Hydra-Cushion For Fragile Freight" billboard lettering. The paint job is smooth and even, with crisp definition in the printed lettering. Even the smallest lettering is legible. When checking this, though, I noticed that the builder's mark has missing letters, reading "PACIFIC CAR AND FOUNDRCOMPANY." I thought this might have been a mechanical misprint, but it was the same on both sides. Our

Cotton Belt sample had the same mistake. However, this type is so small as to render the error unnoticeable.

I compared the paint scheme and detail placement to a photo of a class B-70-57 boxcar in *Southern Pacific Color Guide to Freight and Passenger Equipment* by James Kinkaid (Morning Sun), and everything matches. The blackened metal wheelsets, mounted on plastic axles, are in gauge. The McHenry magnetic knuckle couplers are mounted at the correct height. Unlike prototype Hydra-Cushion-equipped cars, the draft gear is firmly fixed to the car and can't move.

Since the prototypes traveled far and wide in interchange service, these boxcars would make a great addition to any HO scale line from the 1970s on. – Steven Otte, associate editor

QUICKLOOK

Blair Line HO scale Joe's Cabin and outhouse

Price: \$37.95

Manufacturer

Blair Line
P.O. Box 1136
Carthage, MO 64836
blairline.com

Era: 1920s to 1980s

Comments: Though named Joe's Cabin, this structure could easily be used as a farm house or company house. In fact, we used the building as the latter on our upcoming HO scale Virginian Ry. project layout.

The laser-cut wood kit features tab-and-slot construction; a stair assembly jig; peel-and-stick doors, windows, trim, shutters, and roofing; and a cast-metal smokejack. The cabin has a footprint of $2\frac{5}{16}$ " x $4\frac{1}{4}$ "; the outhouse measures $\frac{5}{8}$ " x $\frac{5}{8}$ ".

What the cabin lacks in size it makes up for in detail. The walls have nail-head detail, the shutters have sepa-



ately applied Z-shaped braces, and the outhouse has laser-cut hexagon shingles.

The screen door is the same style Blair Line used on Sam's Roadhouse, which I reviewed in the July 2011 issue. It has a screen pattern printed on a piece of clear styrene. The simulated screen looks very realistic against the white five-panel door.

The instructions are well written and have clear illustrations. The manufacturer also provides a list of necessary tools for assembly and recommended colors for painting.

In addition to the HO kit, Blair Line offers Joe's Cabin in N scale for \$29.95. This structure is sure to add some rustic charm to your model railroad. – C.G.



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TRACKSIDE PHOTOS



▲ A string of Electro-Motive Division SDs wearing the Chicago, Burlington & Quincy's Chinese Red thunders onto the Mrs. Hippy River Bridge. The action takes place on Garry Boyd's freelanced HO scale CB&Q Heartland Division. Garry, from Cadiz, Ky., built the bridge piers from 1/4" plywood. The bridge is made with Atlas deck-truss approaches. Garry also shot the photo.



Want to see your work in Trackage Photos?

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▲ Forney no. 10 works the mill on Pete Birdsong's On2½ Fernwood Lumber Co. RR, set in rural Mississippi around 1910. The locomotive is a Bachmann model Pete weathered and detailed with hand-split firewood. Pete, who lives in Lexington, Ky., also painted the backdrop and scratchbuilt the low-relief lumber mill structures from wood coffee stirrers. Lou Sassi took the photo.



▲ The engineer blasts the horn on his way through Summit to make sure the work crew has enough warning to clear the track. Ron Matzen of Petaluma, Calif., shot the photo on his freelanced HO scale Southern Pacific layout. Ron made the pine trees from branches of an artificial Christmas tree and detailed the Athearn locomotives with Details West and Detail Associates parts.



▲ Led by a pair of Electro-Motive Division FTs, an Atchison, Topeka & Santa Fe reefer train crosses bridge 17 on Phil Maaske's HO scale North Platte RR. Phil models his rocky desert terrain with Structo-Lite, a plaster-like material, troweled over screen wire forms. The ground cover is made from bleached coffee grounds. Dan Lewis shot the photo.



◀ It's only weeks before the end of steam on the Northern Highlands RR as an aging Decapod switches Port Fulton Yard down by the river. Unfortunately, no. 230 is likely to meet a fate no better than that of the grounded, derelict barge. Rene Mack of Wyckoff, N.J., scratch-built the barge from coffee stirrers. He also weathered the HO scale Bachmann locomotive and shot the photo.

An enviable state of affairs



Dave Allen and Ed Werick are just getting started on a new HO scale railroad with myriad challenges, yet unlimited possibilities. The photos show one of the original plan sketches and the corresponding benchwork under construction. Dave Allen photo

Remember when you were a kid and your entire life, whatever it was to be, stretched out before you? You didn't know it then, but a cornucopia of possibilities was at your fingertips. If only you had known when you were a teenager which teachers and classes warranted your undivided attention, you could have taken better advantage of those opportunities.

Anyone contemplating his next model railroad is an honorary teenager. So many possibilities, challenges, choices, pitfalls, and forks in the road lie ahead. Should you knuckle down and choose a specific prototype to model in a narrowly defined time frame and locale? Wouldn't freelancing give you more options? By far the most popular scale and gauge is HO, but is it ideal for you? What's all this commotion about Digital Command Control (DCC) and sound decoders? What track products will best meet your needs? Is a multi-deck railroad a lot more work, and is the gain in mainline run and scenery acreage really worth the extra effort?

More to the point, how can you navigate successfully through this maze of what appear to be viable alternatives?

What occasioned this commentary was an e-mail from my friend Dave Allen from upstate New York with the news that he and his friend Ed Werick are planning a "basement-size HO railroad featuring the Buffalo, Rochester & Pittsburgh Ry., pre-Baltimore & Ohio, in the early part of the 20th century." Dave and Ed are diving into the deep end of the pool: two decks connected with a pair of helixes and a working, if somewhat compressed, model of the coal docks at Genesee. Everything from mainline action to yard switching and even a logging railroad are on their radar screen, all controlled by NCE's DCC system.

Sounds ambitious, doesn't it?

I've known Dave for several decades, and he's been involved in the hobby long enough to know what he and Ed are getting into. Besides, questioning their judgment is a very negative attitude to take. He's not asking us to buy stock in their enterprise, after all.

So let's look at this from the positive side. Take a few moments to think about a railroad that has captured your attention over the years, perhaps your hometown railroad as it appears today or back 10, 20, even 100 years ago.

It's hard to visualize something that existed long before you were born, you


say? But that's exactly the obstacle that Dave and Ed have deliberately erected in their path. And in so doing, they have positioned themselves at the threshold of what will almost certainly be an adventure of a lifetime.

Imagine all of the "Eureka!" moments that they'll encounter on the way to enlightenment. I know just enough about the BR&P to realize that it was an interesting railroad. Out of curiosity, I did a Google search, and the first link that popped up was to a system map of the Y-shaped railroad. That was followed by myriad references to books, magazine articles, annual reports, a list of stations and key facilities, some photos, a roster and list of preserved equipment, timetables – more than enough to keep me up late for weeks.

But the fun doesn't begin with perusing such documents. It starts with the thrill of the hunt. Frankly, I wouldn't model a railroad for which copious information is readily available; I want to seek it out for myself and "contribute to the literature" by gathering and distilling it, and then by sharing my findings with others.

There have been many "Eureka!" moments as I've searched far and wide for information needed for modeling projects or to refine operating methodology. For example, I found a much-needed sketch and photo of the superintendent's office at Frankfort, Ind., buried in a box of field notes from around 1918 in the National Archives Annex in College Park, Md. It had been patiently waiting for me to arrive. It was all I could do to avoid jumping atop the table and doing some sort of victory dance.

Bad form, I suspect, but a great find nonetheless.

I had similar experiences with my freelanced Allegheny Midland when I found must-model prototype structures and other helpful info, so such delights aren't limited to those who model a specific prototype. The point is that a blank sheet of paper should not be seen as an intimidating hurdle but as an engraved invitation to begin a journey of discovery. Like Dave and Ed, be sure to enjoy that part of your trip! 

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Schedule of Events Rate: \$35 per issue (45 word maximum). Ads will contain the following information about the event: state, city, sponsoring organization and name of event, meet, auction or show, dates, location, times, admission fee, name and/or telephone number and/or email of person to contact for information. Name, daytime telephone number and street address of the person providing the information is also required but need not be included in the ad. Unless otherwise requested, ads will be published in the issue month that the event occurs in. Additional months are available at the \$35 per issue fee. Please specify issue date(s).

Word Ad Rates: per issue: 1 insertion — \$2.03 per word, 6 insertions — \$1.89 per word, 12 insertions — \$1.77 per word. \$30.00 MINIMUM per ad. To receive the discount you must order and prepay for all ads at one time. Count all initials, single numbers, groups of numbers (i.e. 4-6-0 or K-27), names, address number, street number, street name, city, state, zip, phone numbers each as one word. Example: John A. Jones, 2102 South Post St., Waukesha, WI 53187 would count as 10 words.

For MR's private records, please furnish: a telephone number and, when using a P.O. Box in your ad, a street address. *Model Railroader* reserves the right to refuse listing.

All Copy: Set in standard 6 point type. First several words only set in bold face. If possible, ads should be sent typewritten and categorized to ensure accuracy.

Send your submissions to: *Model Railroader* — Classifieds 21027 Crossroads Circle, P.O. Box 1612 Waukesha, WI 53187-1612 Toll-free (888) 558-1544 Ext. 815 Fax: 1-262-796-0126 E-mail: onlineclasses@kalmbach.com

All ads must be prepaid and pertain to the subject of model railroading.

CLOSING DATES: Jan 2011 issue closes Oct. 14, Feb. closes Nov. 16, Mar. closes Dec. 14, Apr. closes Jan. 17, May closes Feb. 17, June closes Mar. 17, July closes Apr. 15, Aug. closes May 19, Sept. closes June 16, Oct. closes July 21, Nov. closes Aug. 17, Dec. closes Sept. 15.

Note to Readers: Show dates, times and locations sometimes change. Confirm the details before driving any distance. Please go to ModelRailroader.com and click on the **Schedule of Events** section to get more complete information on these and other coming events.

Schedule of Events

AL, BIRMINGHAM: Smoky City Rails Christmas Model Train Show & Sale, First Baptist Church of Zion City, 1104 Gene Reed Road. Saturday, December 10, 2011, 9:00am-4:00pm. Adm \$6.00 adults; 8-12 \$2.00; under 8 FREE. Handicap Accessible. Operating Layouts. Door Prizes. Sonny, 205-980-0611 or Darryl 205-665-5572 or alexander1069@bellsouth.net

AZ, SCOTTSDALE: Turkey Meet, Chaparral Suites, Scottsdale & Chaparral Roads. November 26; Auction November 27, 9:00am-3:00pm both days. Admission \$6.00 per person, children under 14 free w/paid admission. Toy Train Swap Meet with sales tables, operating layouts, displays. Contact B. Stange at 480-947-5663 or visit www.tcadd.org

CA, SIMI VALLEY: Swap Meet, Santa Susana Railroad Historical Society, Santa Susana Park, 6503 Katherine Rd. October 22, 2011, 7:00am-10:00am. \$2.00 donation, kids under 12 free. All scales, equipment, scenery, books and photos. For vendor table availability contact Dave, 661-753-6006 or e-mail events@santasusanadepot.org

CO, COLORADO SPRINGS: Pike Masters R.R. Club Open house, City Auditorium (west entrance), 221 E. Kiowa. November 12-13, 2011, 10:00am-4:00pm and December 3-4, 2011, 10:00am-4:00pm. Admission \$2.00, family \$4.00. Contact Phil Johnson, 719-591-4198, e-mail SD24B@comcast.net

CO, DENVER: Rocky Mountain Toy Train Show, Denver Merchandise Mart, 451 East 58th Avenue. November 26-27, 2011, Saturday and Sunday 10:00am-5:00pm. Admission \$8.00, under 12 free, All Scales Show, Free Parking. Sponsored by Rocky Mountain Division- TCA. Information John Gardberg 303-364-0274. Discount coupon at www.RockyMountainToyTrainShow.com

CT, NORTH HAVEN: New Haven Railroad Historical and Technical Association 49th Annual Reunion and Train Show. Holiday Inn, Rt. 5, Exit 12 off I-91. Saturday, November 12, 2011. Train show 9:00am-3:00pm. Films, slide shows, modeling clinics, dealers. \$5.00/Adult, \$8.00/Family. Info: Rick Abramson, e-mail: nhr379@att.net 203-372-0818, <http://www.nhrhta.org>

CT, WILLIMANTIC: Connecticut Eastern Railroad Museum Model Train & Die Cast Show: Windham High School, 355 High Street. November 13th, 2011. Hours: 10:00am-3:00pm. Adults, \$6, Kids (8-12) \$1, Children (under 8) Free. Vendors, food, door prize, layouts, handicapped accessible. Info: Joseph Sokol, 860-872-2240, e-mail: joseph_sokol@msn.com

FL, FORT MYERS: Scale Rails Holiday Train Show. Araba Temple, 2010 Hanson Street. November 26-27, 2011, Saturday & Sunday, 10:00am-4:00pm. Admission is \$7.00 for adults, \$2.00 for teens, children under 12 free. Contact: Jim Edmier, 17807 Dracena Circle, North Fort Myers, FL 33917. Phone: 239-731-0520

FL, MAITLAND: TCA Train Show. First Presbyterian Church, 341 N Orlando Ave., (Hwy.17/92). From North: Exit 90, from South: Exit 90A. Saturday, November 19th, 2011. 11:00am-4:00pm. Adults, \$5.00, children under 12 free. Contact: A.Travitsky, 407-260-8599, arni99@aol.com. Next meet: Tampa Bay, January 28th, 2012.

FL, OCALA: Lions Semi-Annual Train Show. Ocala National Guard Armory, 900 SW 20th St. November 5-6, 2011. Saturday 9:00am-4:00pm and Sunday 10:00am-3:00pm. Adults \$4.00, children 12 and under free with paying adult. Bring two canned goods and receive \$1.00 off admission. Information: Barbara West 352-857-2874.

FL, PINELLAS PARK: 61st Train Show. H&R Trains, 6901 U.S. Hwy. 19 N. October 7, 8, & 9, 2011. Friday-Saturday 10:00am-9:00pm, Sunday 10:00am-6:00pm. Free admission. Contact: Alice Morris 727-526-4682, Fax: 727-526-3439, E-mail: hrttrains@hrttrains.com Internet: <http://www.hrttrains.com>

FL, PORT RICHEY: Regal Railways presents Model Railroad Show & Swap Meet. 5850 K Of C Drive, Knights of Columbus. Saturday, November 19, 2011. 10:00am-3:00pm. Adults \$4.00. Vendors, videos and operating layouts. Also serving lunch items. Contact Joe: 727-244-1341 or visit: www.regalrailways.com for more information.

IA, CHARITON: Vendors & visitors invited - 2011 Model Railroad Swap Meet. Carpenter Hall, 1215 Court Avenue. October 15-16, 2011, Saturday 9:00am-5:00pm and Sunday 10:00am-5:00pm. Admission \$3.00, 12 and under free. Tables \$12.00, add \$3.00 for electrical outlet. Food available. Visit <http://www.lucascountytourism.org> Registration information 641-774-4059 or e-mail charittonchamber@iowatelecom.net

IL, JOLIET: Will County Model Railroad Club Annual Swap Meet & Open House. Stone City VFW, 127 Stone City Drive. Sunday, December 4th, 2011. 9:00am-3:00pm. Admission \$3.00 per person, children under 12 free. Dealers Welcome. Contact: Brain Wasko @ 815-730-1785 or visit: www.wcmrra.org

IL, OAK LAWN: Southland Model Railroad Show, Harold L. Richards High School, 10601 S. Central. Saturday & Sunday, October 15-16, 2011. 10:00am-5:00pm. Admission \$6.00, Seniors 65+ \$5.00, children under 12 free. Presented by HLR Music Dept. Contact 708-308-9036,

IL, ST. CHARLES: 20th Annual Chicago Railroadiana Show. Kane County Fairgrounds, 525 S Randall Road. Sunday, October 16th, 2011, 10:00am-3:00pm. Admission: \$5.50+ tax. Tables \$55. For info: RussFierce@aol.com, 847-358-1185 or www.RRShows.com

IN, INDIANAPOLIS: The Indianapolis Model Railroad Show and Open House. Manual High School Gymnasium, Saturday, December 10th, 2011, 10:00am-3:00pm. Admission \$6.00, children 12 & under free. Boy Scouts in uniform free. Free parking. Naptown & White River Model Railroad Club. Contact: Seven Handly, 317-786-8627, Website: <http://www.naptownrr.org>

IN, MICHIGAN CITY: Duneland Model RR Club Train Show and Swap Meet. IBEW Building, 301 East 8th St. Sunday, November 20, 2011, 10:00am-3:00pm (Chicago time). Adults \$3.00, youths 6-13 \$1.00, 5 and under free. Contact: Dave Novak at trains86@frontier.com or 219-778-1186.

IN, NEW HAVEN (FORT WAYNE): Model Toy Train Show - All Gauges. Ken Frecker Auction Arena, 620 West Lincoln Hwy. Saturday, November 26, 2011, 11:00am-3:00pm. Admission: \$4.00, under 12 free. Tables \$12.00, first come basis. Contact: Mike and Diana Bauman, PO Box 661, Decatur, IN 46733, 260-692-2445, 260-692-2446.

IN, ROCHESTER: 14th Annual Fulton County 4-H Club Model Railroad Swap Meet. Fulton County Fairgrounds, 1009 West Third Street. Saturday, November 5, 2011, 11:00am-3:00pm. Admissions: \$3.00/person, \$5.00/family, children under 12 free. For more information contact: Richard or Allison Earg, 574-542-2722, rcearp@embargmail.com or Marvin Good 574-542-4531. trains451@yahoo.com

MA, MARLBOROUGH: Hub Division NER/NMRA. Royal Plaza Trade Center, 181 Boston Post Road West (Rte. 20). December 3-4, 2011, Saturday 10:00am-5:00pm; Sunday 10:00am-4:00pm. Admission \$7.00, Seniors (60+) \$6.00, Under 12/Scouts in uniform FREE. Admission good both days. Information: Mark 508-528-8587; e-mail T.E.info@hubdiv.org; website: www.hubdiv.org

MD, GAITHERSBURG: 6th Annual Gaithersburg Model Train Show. Montgomery County Fairgrounds (Old Auditorium), 12 mi. NW of Washington. Sunday, November 6, 2011. 9:00am - 4:00pm. Adults: \$7.00 (under 12 free). Operating layout. Miller, 3106 N. Rochester St., Arlington, VA 22213. 703-536-2954. E-mail: rrshows@aol.com

MD, TIMONIUM: Great Scale Model Train Show. Maryland State Fairgrounds, October 29-30, 2011. Saturday 9:00am-4:00pm, \$9.00, family \$18.00, under 15 free, good for both days. Sunday 10:00am-4:00pm, \$8.00, family \$15.00. 700+ tables, huge display layouts; free parking. Howard Zane 410-730-1036, hzanef@comcast.net or www.GSMTS.com

ME, BREWER: Eastern Maine Model Railroad Club Show. Jeff's Catering in Brewer, 15 Littlefield Way. Saturday, November 19, 2011, 10:00am-3:30pm. Admission \$4.00 for adults, under 12 free. Dealers, silent auction and operating layouts. Geoff Anthony, PO Box 187, Blue Hill, ME 04614, 207-374-2786, dahak@roadrunner.com

MI, EAST LANSING: Lansing Model Railroad Club Show and Sale. Michigan State University Pavilion. Sunday, November 20, 2011. 10:00am-4:00pm. Admission \$6.00, under 12 free. Mid-Michigan's largest show w/layout exhibits, 500+ tables. Free parking. Show flyer, table forms, map www.lmrrc.org or call Ron St. Laurent 517-347-1831.

MI, LANSING: North Central Region NMRA Convention. Ramada, 7501 W. Saginaw Hwy. November 3-6, 2011. Registration: \$45.00 until October 1, 2011, then \$55.00. Contact: Ron St. Laurent, 4168 Mariner Lane, Okemos, MI 48864, lansinglegacies2011@yahoo.com Website: lansinglegacies2011.org

MI, MONROE: Monroe Model Train Show, MBT Expo Center, 3775 S. Custer Road (M-50) Munroe, MI 48161. Saturday and Sunday, December 17-18, 2011, 11:00am-4:00pm. Admission \$6.00, children 12 and under free w/adult. 250+ tables, operating model train displays, kid's play area featuring "riding Thomas". monroetrainshow@modelrailstuff.com

MN, ST. CLOUD: Granite City Train Show and Sale. Saturday, November 12, 2011; National Guard Armory, 1710 Veteran's Drive. 10:00am-4:00pm. \$5.00, 12/under free. Buy/sell model/toy trains, books, videos, railroad collectibles. Operating displays. Children's railway play area. Win a LIONEL Train Set. 320-255-0033; edwardolson@cloudnet.com or www.GraniteCityTrainShow.com

NC, CLEMMONS - WINSTON-SALEM: 2nd annual Thompson's Old Fashioned Train Show. Village Inn Golf and Conference Center, 6205 Ramada Dr., Exit 184 off I-40. Sunday, November 20, 2011, 10:00am-3:00pm. Adults \$5.00, children 10-14 \$2.00, under 10 free. All scales. Free parking. Operating layouts. Vendors contact David Thompson 517-304-0638.

NC, FLETCHER: Autumn Rails All Scales Train Show, Western North Carolina Agricultural Center, Boyleston Highway & Fanning Bridge Road. October 14-15, 2011, Friday 1:00pm-7:00pm and Saturday 9:00am-3:00pm. Adults \$6.00, under 12 and scouts free. Presented by French Broad eN'pire, Chuck Place, 828-685-2726, hmp3@blueridge.net, www.fbe-ntrak.com/autumnrails.htm

NH, BEDFORD: Bedford Boomers 29th Annual Model Railroad Exhibition. McKelvie Middle School, Liberty Hill Road. November 6, 2011, 10:00am-4:00pm. Donations only. No dealers. Contact: Norm Jones, 978-687-0780, Email: Normang.jones@gmail.com

NH, BETHLEHEM: AVRA 33rd Annual Fall All Scale Model Railroad Show. Profile School, Profile Road, October 29, 2011, 10:00am-3:00pm. Adults \$3.00, students/children free. Profile Road less than 1/10 mile east of junction US 302 & I-93 exit 40. Bill Driscoll, 603-747-3492 or Dick Ekwall, 604-989-5543.

NJ, MAGNOLIA: Magnolia Historical Society Model Train Show. Community Center at Brook & Albertson Avenues. Saturday, November 12, 2011. 9:00am-3:00pm. Admission: Adult \$5.00, student \$3.00, children under 10 FREE. Vendors, layouts, door prizes. Contact Mert Gardner 856-784-8251 or events@magnoliainstation.com

NJ, PEMBERTON: PTH 13th Annual Train, Toy & Collectible Show. Township High School, Arney's Mount Road. Saturday, November 19, 2011, 9:00am-3:00pm. \$4.00, under 10 free with adult admission. Contact: Louis DiGirolamo, PO Box 1836, Frederick, MD 21702 phone: 301-663-1905.

NY, ALBANY: Annual "Great Train Extravaganza." Empire State Convention Center. December 4, 2011. 10:00am-4:00pm. \$5 adults, children free. Operating layouts. 200+ tables of model trains, train sets, parts, accessories, scenery items, books, videos, DVDs, prints, railroad memorabilia. Educational displays. Seminars. www.gtealbany.com 518-668-9892, trains@gtealbany.com

NY, NORTH LINDENHURST: TMB Model Railroad Club Open House. 1110 A Route 109, North Lindenhurst, NY 11757. November 6 & 26-27, 2011, December 10-11, 2011, January 7-8, 2012. February 5, 2012. 12:00pm-4:00pm all dates. 3000 sq. ft. O Gauge Hi-Rail layout. Call 516-660-8099 or www.tmbmodeltrainclub.com

OH, DALTON: CJ Trains Fall Greater Wayne County Train and Toy Show. Buckeye Event Center, 624 Henry St. Sunday, November 13, 2011, 10:00am-4:00pm. \$5.00 admission, 12 and under free. \$25.00 dealer table, 450+ dealer tables. Jon Ulbright, 941 Buchholz Drive, Wooster, OH 44691, 330-262-7488. cathjion@sssn.net or www.cjtrains.com

OH, DAYTON: Dayton Train Show. Hara Arena, 1001 Shiloh Springs Rd. November 5-6, 2011, 11:00am-5:00 on November 5th and 11:00am-4:00pm on November 6th. \$6.00, under 12 free. Nick Folger, PO Box 341233, Dayton, OH 45434, 937-429-5353, Internet: chair@daytontrainshow.com

OH, KIRTLAND: 5th Season Christmas Train & Collectible Toy Show. Lakeland Community College, I-90 & State Rt 306 Southeast corner. Sunday, December 11, 2011 10:00am-3:30pm. 250 tables - 2,000+gate. Adults \$6.00, Family \$12.00 (children under 18) 6' tables \$22.00. Bob Frieden, 9695 Chillicothe Rd., Kirtland, OH 44094, 440-256-8141.

OH, MASSILLON: CJ Trains Winter Massillon Train and Toy Show. Knights of Columbus Hall, 988 Cherry Road NW. Sunday, December 11, 2011, 10:00am-3:00pm. \$5.00 admission, 12 and under free. \$20.00 dealer table, 148 dealer tables. Jon Ulbright, 941 Buchholz Drive, Wooster, OH 44691, 330-262-7488. cathjion@sssn.net or www.cjtrains.com

OH, MILAN: Norwalk & Western RR Train & Toy Show, EHOVE Career Center, 316 W. Mason Rd. (1/4 mile north of Ohio Turnpike Exit 118). Sunday, November 13, 2011. 10:00am-3:00pm. Admission: 10 and over \$4.00. Contact Tony Catalano, PO Box 938, Norwalk, OH 44857, 419-706-8038, www.norwalkandwesternrr.com

PA, GLENDISE: 8th Annual Toys for Tots Train Show. VFW Post 676, 2519 Jankintown Rd. Saturday, November 19, 2011, 9:00am-2:00pm. Adults are \$3.00, kids under 12 are free. Info: Mark Carver 215-264-8699.

PA, HORSHAM: Main Street Hatboro Train Show. Keith Valley Middle School, 227 Meetinghouse Rd. Saturday, December 3, 2011, 9:00am-3:00pm. \$5.00 adults, under 12 free. New vendors and layouts. Over 800 visitors in 2010. Al Wipplinger 215-672-7390, villagehdw@aol.com or Joe Lutz J040440@verizon.net

SC, NORTH CHARLESTON: 14th Annual Best Friend of Charleston Train Show. Sponsored by: Charleston Railroad Historical Society. November 12-13th. 5000 Lackawanna Blvd. Saturday and Sunday 10-4pm. Admission: \$5, children under 10 free with adult. Operating layouts, tables available. Contact: Mary Lehr: 843-768-0691 e-mail: BestFriendModelTrainShow@yahoo.com; www.BestFriendofCharleston.org/ModelTrainShow.html

TX, FORT WORTH: NTC offers the 27th Annual Fort Worth Holiday Train Show. Amon Carter Exhibit Center. November 12-13, 2011, Saturday, 10:00am-5:00pm & Sunday 10:00am-4:00pm. Adults \$8.00, children 12 & under free. 12 operating layouts, gauges N-G. Information: dfwtrainshows.com or agsvatek@yahoo.com 817-441-1516.

TX, HOUSTON: Houston Railroad Museum's Second Annual Big Texas Train Show. George R. Brown Convention Center. 1001 Avenida de las Americas, October 8-9, 2011, Saturday 10:00am-5:00pm and Sunday 10:00am-4:00pm. For more information: www.bigtexastrainshow.com, email info@houstonrrmuseum.org or telephone 832-675-1905.

TX, NEW BRAUNFELS: New Braunfels Railroad Museum Third Annual Fall Train Show. New Braunfels Civic Center, 380 Seguin Ave. November 5, 10:00am-5:00pm and November 6, 10:00am-4:00pm. Adults \$7.00, under 18 \$2.00. Jim Edmondson 830-629-2071. 120+ tables, door prizes, refreshments, museum open house, free kid train rides.

VA, VIENNA: Open House (HO Scale): Reopening Northern Virginia Model Railroaders. In the historic Vienna Depot of the former Washington & Old Dominion, 231 Dominion Road NE. Saturday, November 12, 2011, 1:00pm-5:00pm. Admission is free (donations accepted). www.nvmr.org or 703-938-5157 (leave message).

VA, WINCHESTER: Winchester Model Railroad Club Train Show and Sale, Friendship Fire Hall, North Pleasant Valley Road. Saturday, March 12, 2011, 9:00am-2:00pm. Adults \$4.00 (\$3.00 w/Post Card), children 12 and under free w/adult. Club Layout, 430 N. Cameron St., open during show. Info: 540-665-9898, www.mrrc.org

WA, KENT: Boeing Employees Model Railroad Club Annual Swap Meet. Kent Commons, 525 - 4th Avenue North. Saturday, November 12, 2011, 9:30am-4:00pm. \$7.00 adults, children 14 and under free. Ed Sherry, 550 SW Colewood Lane, Normandy Park, WA 98166; 206-244-3884; swapmeet@bemrrc.com

WI, GREEN BAY: 2nd Annual First Freeze Fall Train Show & Swap Meet! Riverside Ballroom, 1560 Main Street. October 23, 2011, 9:00am-3:00pm. Adults \$3.00, 12 and under free. Tables \$20.00 with 100+ available. All gauges Z thru G. Set-up Sunday morning 6:00am-9:00am. Contact: Bob, 920-465-7913

CANADA, ON, WHITBY: Pine Ridge Railroaders Show, 1020 Dryden Blvd. Father Leo J. Austin School near Anderson Street. November 19-20, 2011. Saturday 10:00am-4:30pm, Sunday 10:00am-4:00pm. Admission: Adults \$5.00, under 14 \$2.00, under 5 FREE. Multi-scale layouts & displays, vendors and videos. Information: stesha26@hotmail.com or www.trainweb.org/prrc

Classifieds

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ESTATE SALE 1- OMI#4514.1 4-8-8-4 BigBoy UP#4080 Centipede tender (coal) FP NIB Never run, mint condition - \$2,500.00 OBO 702-293-4603 or julianne65@centurylink.net

ESTATE SALE 1- OMI#1592.1 4-6-6-4 Challenger UP#3981 Centipede tender (oil) Smoke cars TTG NIB. Never run, mint condition - \$2,000.00 OBO 702-293-4603 or julianne65@centurylink.net

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Wanted-HO Scale

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\$1,000,000 CASH AVAILABLE- For your collection! Brass, Plastic, Memorabilia, we buy it all. Call us 352-292-4116 or mail your list to: BRASSTRAINS.COM, 344 Cypress Rd., Ocala, FL 34472. E-mail: dan@brasstrains.com

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Wanted-O Scale

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Wanted-O Tinline

BUYING O and Standard gauge collections. Lionel, Flyer and all others. Call Tom 630-443-9137

For Sale - Miscellaneous

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Wanted - Miscellaneous

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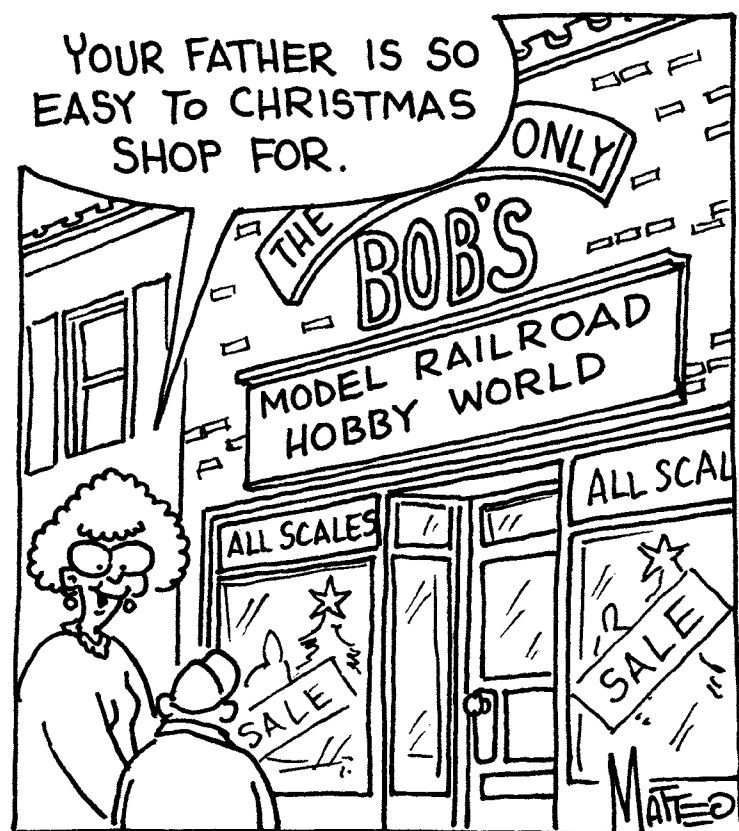
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Uncoupling, manual and magnetic

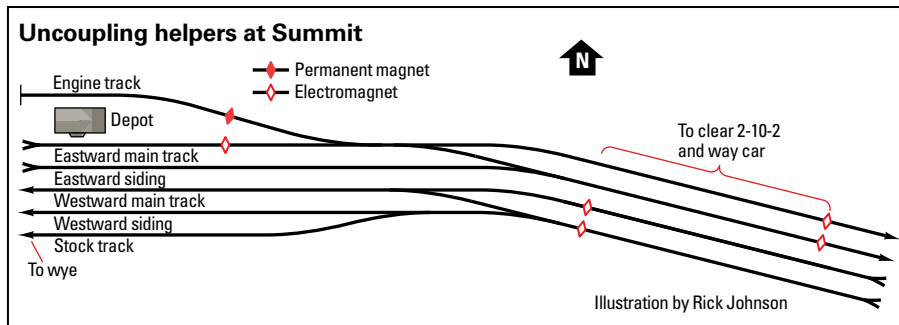
Kadee introduced its Magne-Matic HO coupler in 1959, and within a few years it became the virtual standard of the model railroad hobby. When the expiration of Kadee's patents allowed other companies to market various similar magnetic knuckle couplers, they became original equipment in most ready-to-run and kit rolling stock. As must seem curious to any outside observer, however, the majority of model railroad operators simply ignore magnetic uncoupling and uncouple their cars manually.

Manual uncoupling is nonetheless completely understandable from an operator's perspective. After all, even in the high-tech environment of today's railroads, a crew person still has to lift or pull an uncoupling lever handle to separate cars, trains, and locomotives. In some respect, then, manual uncoupling approximates a basic part of a professional railroader's everyday job.

It's also true that manual uncoupling frees layout builders from a certain amount of planning. If you want to use concealed magnets to uncouple, you have to think through the possible switching movements in advance to decide where to install the uncouplers as you lay the track. This can be a daunting prospect for builders inexperienced in operation, and more trouble than many think it's worth.

Expense and complexity are concerns too. For layouts with many switching locations, the cost of magnets will add up, especially where electromagnets are needed to prevent accidental uncouplings. And for simpler shelf switching layouts or any with all track within easy reach, there may be no reason to complicate the construction or wiring.

Magnetic uncoupling does have its applications, however, and I think more builders of operating layouts might want to consider them. For example, the diagram above shows part of the Summit, Calif., track arrangement on my HO scale Cajon Pass layout. Helper service was a major part of the 1947 mainline Santa Fe and Union Pacific operations I want to model, and this station at the top of the pass is where helpers cut off the trains to return downhill to their base in San Bernardino.



In studying how the helpers worked, I saw that there was a regularity to their movements, including where and how they were separated from the trains they helped. When eastward passenger trains had helpers, for example, they double-headed in front of the road engines. Arriving at Summit, a passenger train with a helper stopped on the eastward main west of the engine track switch and uncoupled the helper engine so it could run ahead and back into the engine track behind the depot.

On eastward freights the helpers were cut in as pushers ahead of the way car (caboose). After stopping east of the crossover, on either the eastward main or siding, the pushers uncoupled from their trains, backed their way cars onto the engine track, then left the way car on a grade there while they moved into the clear toward the depot on the eastward main. The crew would line the engine track switch and let the way car roll out of the inclined track back to the train. If the way car didn't coast far enough, the helper was now behind it and could shove it to a coupling.

Freight or passenger helpers then worked their way over to the stock track using crossovers west of the depot that aren't shown on the diagram. The stock track led to the wye, where the engines turned to face west for the trip home.

With these regular movements in mind, I installed electromagnets concealed under the ties of the eastward main line and eastward siding, and a concealed permanent magnet under the engine track. While I was at it I also installed electromagnets under the westward main line and siding where double-heading helpers on westbound trains would cut off. Fewer trains needed help on the westward climb, but some did.

Part of what makes these uncoupling magnets worthwhile is that Summit is 66" above the floor, and even standing on a 10"-high operating platform it can be a little awkward to reach across three or four tracks at that height. Eventually I'll have details like switch stands and line poles in the scene, so I'd rather operators didn't have to reach in at all. Magnetic uncoupling will make that possible, and will add a bit of unseen "magic" to the train and engine movements at Summit.

Incidentally, my five Summit electro-magnets are powered by a time-delay circuit that works like the one described by Jean C. Piquette on page 46 in this issue. As he suggests, I use a five-position rotary switch to select which magnet will be energized when the button is pushed. The magnets stay powered long enough to let the helper engineers get both hands back on the throttle to complete the uncoupling movement.

(You can read more about my Cajon Pass layout in the upcoming 2012 edition of *Model Railroad Planning*. It'll be on sale in January.)

There are many other situations where magnetic uncoupling can really pay off on an operating layout. I plan to use electromagnets on double-ended freight yard tracks so yard engineers can work from office chairs. My prototype puts main tracks and passenger station tracks in front of the yards, so reaching in won't be too convenient anyway.

Speaking of passenger stations, manually uncoupling passenger cars with diaphragms can be troublesome, especially in a station with umbrella or overhead train sheds. Electromagnet uncouplers would be great for those cases.

Magnetic knuckle couplers give us a capability for action at a distance. It's too good an opportunity to overlook. **MR**



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